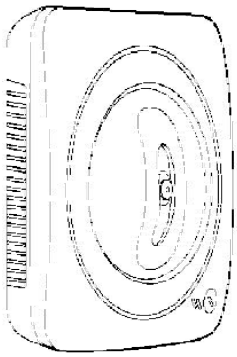
ORDER NO. KMS0504060CE
F5

Service Manual

Network Camera

KX-HCM110A
(for U.S.A.)



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IMPORTANT INFORMATION ABOUT LEAD FREE, (PbF), SOLDERING
If lead free solder was used in the manufacture of this product the printed circuit boards will be marked PbF.
Standard leaded, (Pb), solder can be used as usual on boards without the PbF mark.
When this mark does appear please read and follow the special instructions described in this manual

on the use of PbF and how it might be permissible to use Pb solder during service and repair work.

1. ABOUT LEAD FREE SOLDER (PbF: Pb free)

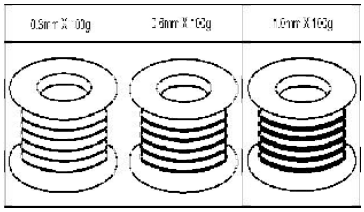
Note:
In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.
We will use PbF solder when discussing the lead free solder used in our manufacturing process which is made from Tin, (Sn), Silver, (Ag), and Copper, (Cu).
This model, and others like it, manufactured using lead free solder will have PbF stamped on the PCB. For service and repair work we suggest using the same type of solder although, with some precautions, standard Pb solder can also be used.

Caution

- **PbF solder has a melting point that is 50° ~ 70° F, (30° ~ 40°C) higher than Pb solder. Please use a soldering iron with temperature control and adjust it to 700° ± 20° F, (370° ± 10°C). In case of using high temperature soldering iron, please be careful not to heat too long.**
- **PbF solder will tend to splash if it is heated much higher than its melting point, approximately 1100°F, (600°C).**
- **If you must use Pb solder on a PCB manufactured using PbF solder, remove as much of the original PbF solder as possible and be sure that any remaining is melted prior to applying the Pb solder.**
- **When applying PbF solder to double layered boards, please check the component side for excess which may flow onto the opposite side (See figure, below).**

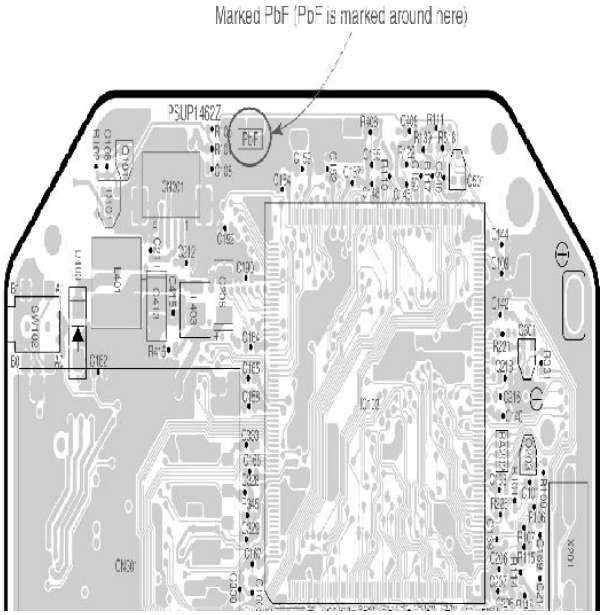
1.1. SUGGESTED PbF SOLDER

There are several types of PbF solder available commercially. While this product is manufactured using Tin, Silver, and Copper, (Sn+Ag+Cu), you can also use Tin and Copper, (Sn+Cu), or Tin, Zinc, and Bismuth, (Sn+Zn+Bi). Please check the manufacturer's specific instructions for the melting points of their products and any precautions for using their product with other materials. The following lead free (PbF) solder wire gauge are recommended for service of this product: 0.3mm, 0.6mm and 1.0mm.

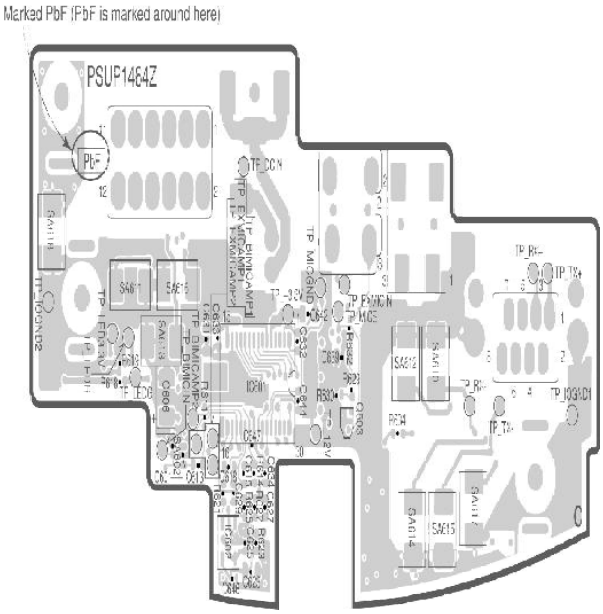


1.2. HOW TO RECOGNIZE THAT Pb FREE SOLDER IS USED

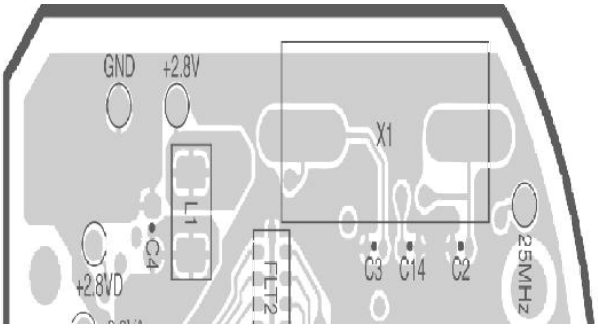
MAIN BOARD



I/O BOARD



CAMERA BOARD



2. FOR SERVICE TECHNICIANS

ICs and LSIs are vulnerable to static electricity.
When replacing, the following precautions will help to prevent recurring malfunctions.

1. **Cover the plastic parts with aluminum foil.**
2. **Ground the soldering irons.**
3. **Use a conductive mat on the work-table.**
4. **Do not grasp IC or LSI pins with bare fingers.**

3. CAUTION

3.1. SAFETY PRECAUTIONS

1. **Before servicing, unplug the power cord to prevent an electrical shock.**
2. **When replacing parts, use only manufacturer's recommended components for safety.**
3. **Check the condition of power cord. Replace if wear or damage is evident.**
4. **After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.**
5. **Before returning the serviced equipment to the customer, make the following insulation resistance test to prevent a shock hazard.**

3.2. BATTERY CAUTION

Danger of explosion if the battery is replaced incorrectly. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to following caution:
Disposal or transportation of lithium batteries should be performed by permitted, in accordance with federal, state and local guidelines.
A battery continues to have no transportation limitations as long as it is separated to prevent short circuits and packed in strong packaging.
Commercial firms that dispose of any quantity of lithium cells should have a mechanism in place to account for their ultimate disposition. This is a good practice for all types of commercial or industrial waste.
When the lithium battery is exchanged, the clock settings are cleared. In this case, make clock settings again.
Recommend Type Number:
CR2032/1VC1 (BAT401) Manufactured by MATSUSHITA

3.3. TRADEMARKS

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- Pentium is a trademark or registered trademark of Intel Corporation or its subsidiaries in the United States and other countries.
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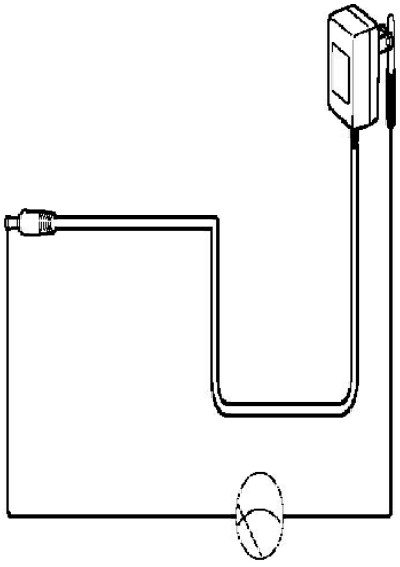
- All other trademarks identified herein are the property of their respective owners.
- This software is based in part on the work of the Independent JPEG Group.

3.4. INSULATION RESISTANCE TEST

1. Unplug the AC power cord and short the two prongs of the plug with a jumper wire.
2. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screw threads, etc.

Note:
Some exposed parts may be isolated from the chassis by design. These will read infinity.

3. If the measurement is outside the specified limits, there is a possibility of shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.



Resistance = more than 1MΩ (at DC 500 V)

3.5. POWER CAUTION

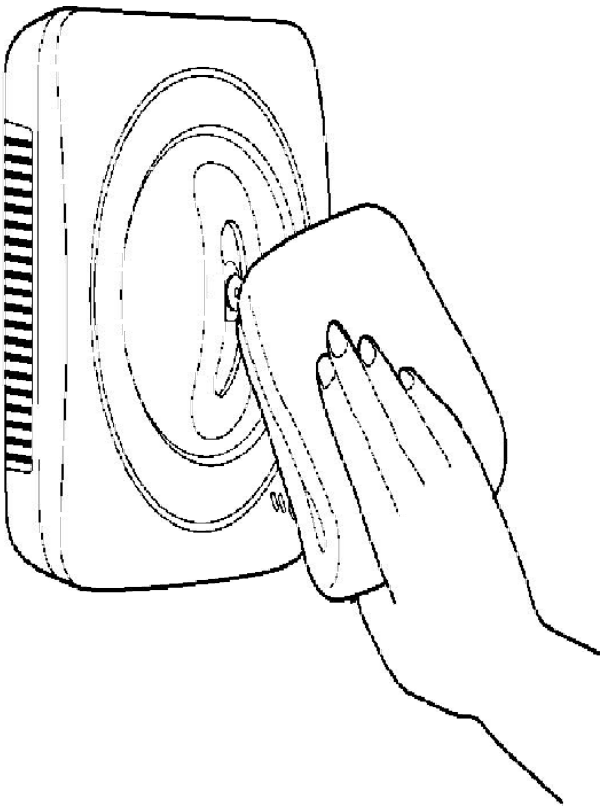
The power socket wall outlet should be located near this equipment and be easily accessible.

3.6. CLEANING

After the camera is turned off by disconnecting the AC plug, clean the camera.

3.6.1. Cleaning the Main Unit

If the lens cover has the sand or the dust, image quality may decrease. After taking away the sand or the dust on it, wipe it with a dry cloth.



Note:

- Do not use alcohol, polishing powder, cleanser, benzine, thinner, wax, petroleum products or hot water to wipe the camera. Also avoid pesticide, glass cleaner or hair spray. They may cause change in the shape or color.

- Do not directly touch the lens cover. Your fingerprints can cause the image to be out of focus.

4. SPECIFICATIONS

Network Camera

Items	Specifications
Zoom	10x digital zoom
Pan/Tilt Angle	Pan: -60° to +60°, Tilt: -45° to +20°
Number of Pixels	1/4-inch CMOS Sensor 320,000 pixels
Illuminance	5-10,000 lx (1-10,000 lx in color night view mode)
White Balance	Auto/Manual/Hold
Focus	Fixed 0.5m (20 inches) - Infinity
Caliber Ratio (F No.)	F2.8
Horizontal Viewing Angle	43°
Exposure	Auto

Other Specifications

Items	Specifications
Video Compression	JPEG (3 Levels)
Video Resolution	640 x 480, 320 x 240 (default), 160 x 120
Buffered Image *1	About 125 frames (320 x 240) with time display
Audio Communication	2-way Half Duplex
Audio Bandwidth	300 Hz-3.4 KHz
Audio Play Method	Play with ActiveX
Input Encoding Method	Encoding with ActiveX
Audio Input	Built-in Microphone or External Microphone Input Terminal
Audio Output *2	Audio Line Output Terminal for External Speaker
Frame rate *3	Max.12 frames/second (640 x 480) Max.30 frames/second (320 x 240 or 160 x 120)
Supported Protocols	IPv4/IPv6 Dual-Stack -IPv4: TCP, UDP, IP, HTTP, FTP, SMTP, DHCP, DNS, ARP, ICMP, POP3, NTP, IPsec, UPnP -IPv6: TCP, UDP, IP, HTTP, FTP, SMTP, DNS, ICMPv6, POP3, NDP, NTP, IPsec
IPsec Feature	ESP Encryption, ESP Authentication Transport mode/T nnel mode IKE (Internet Key Exchange)
IKE (Internet Key Exchange)	Pre-Shared Key
Cipher Algorithm	DES-CBC, 3DES-CBC, AES-CBC
Message-Digest Algorithm	HMAC-MD5, HMAC-SHA-1
Message Transfer Condition	Alarm, Timer or Motion Detection
Image Transfer Method	SMTP, FTP
Interface	10Base-T/100Base-TX Ethernet RJ-45 connector x 1
Indicator Display	Power/Network Communication/Camera operation/Ethernet link
External Microphone Input	3.5 mm Mini Jack
Audio Output	3.5 mm Stereo Mini Jack (But outp t is mono.)
External I/O	External Sensor Input x 2 External Sensor Output x 1
SD Memory Card Slot	Full Size
Dimension (HWD)	About 100 mm (3.94 inches) x About 100 mm (3.94 inches) x About 73.5 mm (2.89 inches)
Weight	275 g (0.61 lb.) (Only the unit)
Power Supply	AC adaptor: Input 120 V AC, 60 Hz Output 12 V DC, 750 mA Consumption: About 2.5 W (5.5 W during pan/tilt scan)
Temperature	Operation: 0 °C (+32 °F) to +40 °C (+104 °F) Storage: +0 °C (+32 °F) to +50 °C (+122 °F)
Humidity	Operation: 20%-80% (No Condensation) Storage: 20%-90% (No Condensation)

***1) The maximum number of frames changes depending on the image quality and what object you buffer.**
***2) Connect it to an amplifier or an external speaker with a built-in amplifier.**
***3) Frame rate may slow down depending on the network environment, the PC performance, the image quality, enabling IPsec or what object you view.**

5. MAIN FEATURES

IPv6*1 Network Camera
Your Panasonic Network Camera supports IPv6 (Internet Protocol Version 6), IPv6 was created to address the additional IP addresses that will be needed as the Internet continues to expand.Since the camera also supports IPv4 that's currently used, it is "dual stack" design will seamlessly operate while IPv6 is phased in. For more information in IPv6 you wish to visit http://www.ipv6.org/.

Audio 2-way Communication*2 (Walkie-talkie Type)
Your Panasonic Network Camera now provides 2-way audio, between the camera and your PC. You will be able to hear the person on camera and respond using a microphone connected to your PC's sound card (customer-provided.) They will hear your response through the amplified speaker (customer-provided) connected to the camera.
For example, the camera can be used in the following various locations:

- In the baby's room, to hear if the baby is crying.
- At the front door, to see and hear who is at the door.
- In the children's play room, to see and hear if they are safe.

Note:
PLEASE NOTE that nder certain circumstances, audio/video recording may be PROHIBITED by law. This device should be used only in compliance with all applicable federal, state and local statutes.

Digital zoom feature*3
Camera has a 10x digital zoom feature.
This feature allows you to increase or decrease the size of the object on the Single Camera screen, the Multi Camera screen, and the Buffered Image screen.
Therefore, it will be easy to view the object that located to a distant place.*4 A mouse wheel operation and clicking the right mouse button increase or decrease the size of the object on the Single Camera screen.

Better Image Quality
The CMOS sensor and the color night view mode provides better image quality and low light performance.

- The CMOS sensor gives you clear image.
- You can monitor live video (Motion JPEG) that refreshes its image 30 frames per second.

- Color night view mode allows you to monitor the camera in low illuminance.

Various Camera Control Features
The camera pans or tilts fast in maximum 80° per second. You can control the camera at high speed from your PC or cell phone. Alarm position feature also allows the camera to automatically turn the lens to the alarm position. Additionally, the following control features are available to easily and quickly monitor the camera.
Click to Center...When yo click a certain point on the camera image, the point is centered on the image.
Preset Position...You can register 8 preset positions.When yo click each button, the image switches to its position.
Output Control...You can control the external devices (Open or Short to GND)(E.g., turning the light on or ringing a buzzer).

Multi-Camera Support
Multi-Camera page displays up to 4 cameras while supporting each audio 2-way communication. The previous model displays only 4 cameras, but this camera can switch 3 sets of 4 cameras. Additionally, the camera can displays maximum 12 cameras on a page in a static image.

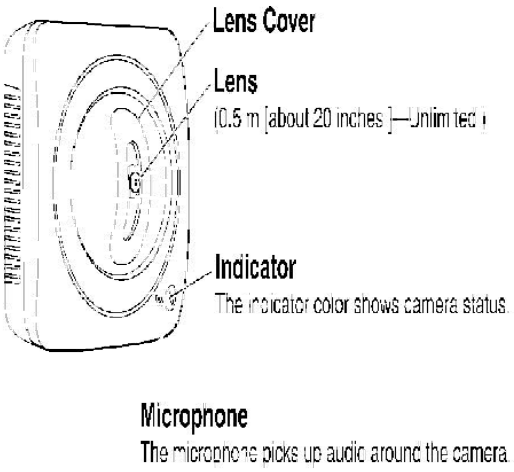
Multi-Language Display
Top page,Single Camera and Multi-Camera page can be displayed in English, French, German, Italian, Spanish, Russian, Simplified Chinese or Japanese. The Setup, Maintenance and Support pages are displayed only in English or Japanese.

Motion Detection feature
Camera has a Motion Detection feature that detects movement, such as people, based on the preset threshold and sensitivity of Camera.
You can buffer the camera images, transfer to an FTP server or send E-mails using the Motion Detection function as a trigger.

***1 To connect in IPv6, subscribe to the ISP's "IPv4/IPv6 Dual-Stack" or "IPv6 over IPv4 Tunneling" service. The camera does not work in IPv6-only network.**
***2 Audio feature does not work on mobile phones. Talk button and Listen button cannot be used sim ltaneously. In IPv6, the audio feature does not work. It will be supported by the firmware update in the future. In consequence of traffic and network environments, the audio may be delayed or may break up.**
***3 This feature is not available when viewing on a cell phone.**
***4 As the magnification increases, the image quality decreases.**

6. PARTS LOCATIONS

6.1. FRONT VIEW

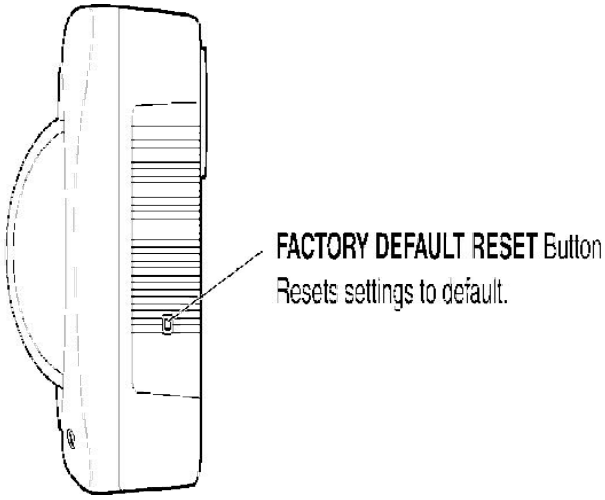


Indicator Display

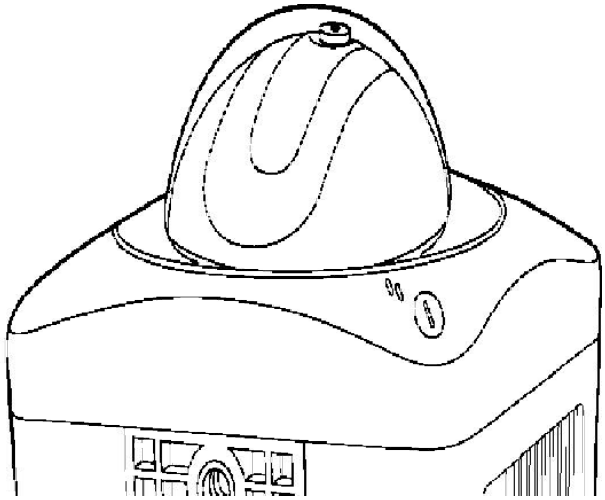
Power on	**Not on the LAN**	**Orange → Orange blinking**
	On the LAN	**Orange blinking → Green blinking → Green**
Normal Operation *1		**Green**
Automatic Setup	**Setting**	**Green blinking**
	Finished seting	**Green blinking → Green**
Using DHCP	**Getting IP address *2**	**Green blinking**
	Got IP address	**Green**
Updating Firmware		**Orange blinking**
Pressing FACTORY DEFAULT RESET button		**Orange blinking → Turning off (The camera restarts after that.)**
UPnP Failure		**Orange blinking (About a 2-second interval)**
Internal Failure		**Red blinking**

***1) The indicator turns orange if the camera is not connected to the LAN.**
***2) The indicator blinks orange if the camera is not connected to the LAN.**

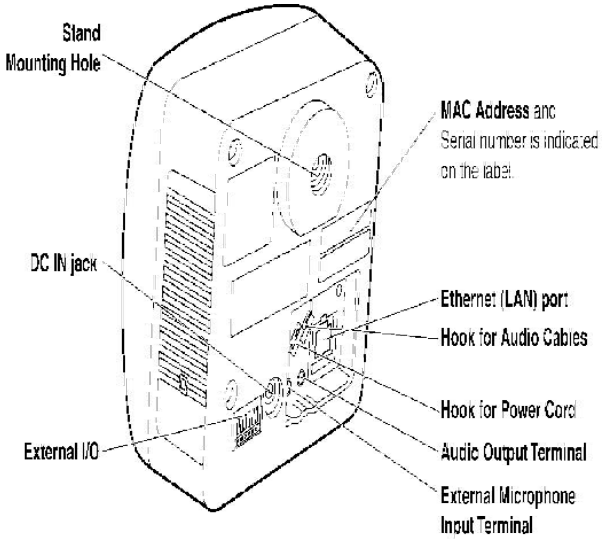
6.2. SIDE VIEW



6.3. BOTTOM VIEW



6.4. REAR VIEW



Note:
To listen to audio from the camera, an external amplified speaker (customer-provided) must be connected to the camera. The connector used is a stereo type, similar to that used by amplified PC speakers. Though the connector is stereo, the audio is not.

7. CONNECTING YOUR NETWORK CAMERA

7.1. PREPARATION

Prepare the following before connecting the Network Camera.

- Set up software (Setup CD-ROM)
- PC to fulfill the system requirements.
- Ethernet Router for LAN Connection.
- Ethernet cable (two pieces of Category 5 straight cable).

System Requirements for your PC
Your PC (Personal Computer) and network must meet the following technical specifications for the camera to work properly.

For IPv4 Connection

Item	Description
Operation System	Microsoft ® Windows ® XP Microsoft ® Windows ® 2000 Microsoft ® Windows ® Me Microsoft ® Windows ® 98SE
CPU	-For viewing single camera Pentium ® III (800 MHz or greater is recommended.) -For viewing multiple cameras Pentium ® 4 (1.8 GHz or greater is recommended.)
Protocol	TCP/IP protocol (HTTP, TCP, UDP, IP, DNS, ARP, ICMP)
Interface	10/100 Mbps network card installed
Web Browser	Internet Explorer 6.0 or later (Not included on the Setup CD-ROM)
Audio	Audio input/output feature (Microphone or speaker)

For IPv6 Connection

Item	Description
Operation System	Microsoft ® Windows ® XP Service Pack 1 or later
CPU	-For viewing single camera Pentium ® III (800 MHz or greater is recommended.) -For viewing multiple cameras Pentium ® 4 (1.8 GHz or greater is recommended.)
Protocol	TCP/IP protocol (HTTP, TCP, UDP, IP, DNS, ICMPPv6, NDP)
Interface	10/100 Mbps network card installed
Web Browser	Internet Explorer 6.0 or later (Not included on the Setup CD-ROM)
Audio	Audio input/output feature (Microphone or speaker)

Note:
See Panasonic Network Camera support website at
http://panasonic.co.jp/pcc/products/en/netwkcam/ for the latest information about web browser.

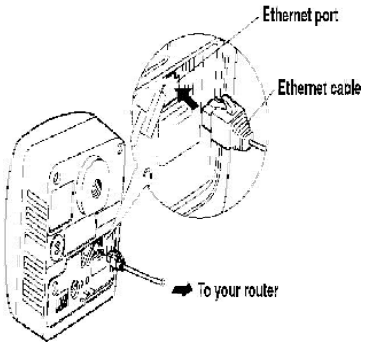
7.2. CONNECT THE CAMERA TO YOUR ROUTER

Connect the camera to your router with an Ethernet cable to set up the camera.

- **Before you begin the installation, the UPnP feature in your router needs to be enabled. Usually, the default setting disables this feature. For more info, please visit, http://panasonic.co.jp/pcc/products/en/netwkcam/ or contact your router's manufacturer.**
- **These instructions assume your PC is already connected to the Internet and your home network includes a router that is UPnP and Play) compliant.**

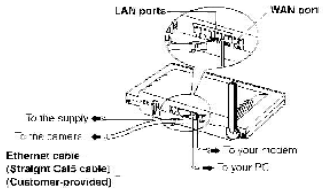
- The camera will be connected to your router using a "straight" Cat5 network cable (customer-provided).

1. Connect the Ethernet cable (customer-provided) to the camera.



Note:
These instructions assume your PC is already connected to the Internet and your network includes a router.

2. Connect the Ethernet cable to your router.



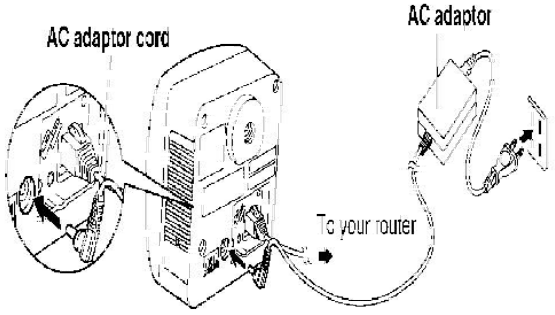
7.3. TURN THE CAMERA ON

Inserting the AC plug of the AC cord to the outlet powers up the camera.

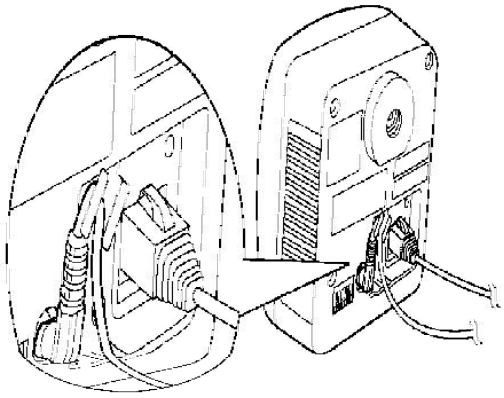
1. Connect the power cord of the AC adaptor to the DC In jack, and plug the AC cord into the outlet.

   - The AC cord is used as the main disconnect device, ensure that the socket-outlet is located/installed near the equipment and is easily accessible.
   - Use only specified Panasonic AC adaptor PQLV202 (Order No. PQLV202Y).

- If the indicator does not light green, see page 3 of the Troubleshooting on the Setup CD-ROM.
- A noise can be heard during pan/tilt operation. This is normal.



2. Hook the AC adaptor cord to the Hook for AC adaptor cord.



7.4. SET UP THE CAMERA

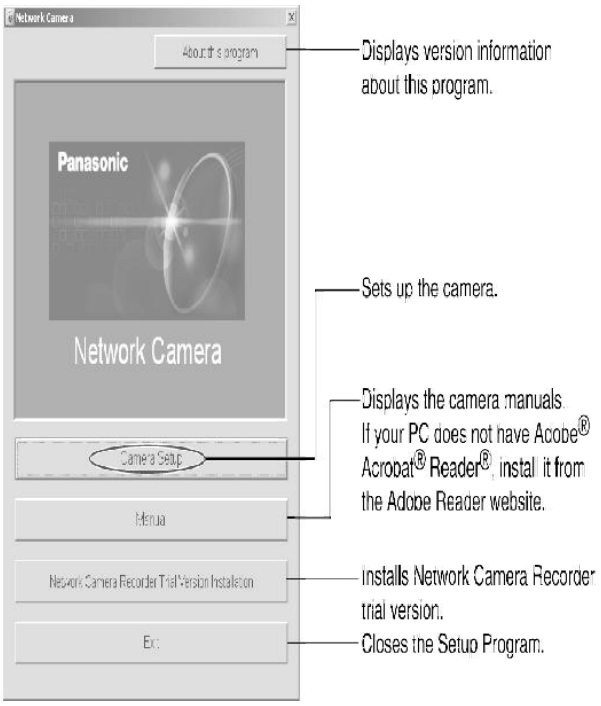
Important

- To avoid any possible problems, temporarily disable any firewall or antivirus software.
- This procedure explains installation of the camera on the same network that your PC is part of.
- Before proceeding, close your web browser.

1. Insert the Setup CD-ROM into the CD-ROM drive of the PC.

(If the Network Camera Setup window is not displayed automatically, double-click "Setup.exe" file on the Setup CD-ROM.)

2. Click [Camera Setup].



- If Windows Security Alert is displayed, click [Unblock].

3. Select the camera to set up and click [Execute].

- This program searches for the cameras that are connected to the router and displays the MAC Addresses, IP addresses and Port Numbers.

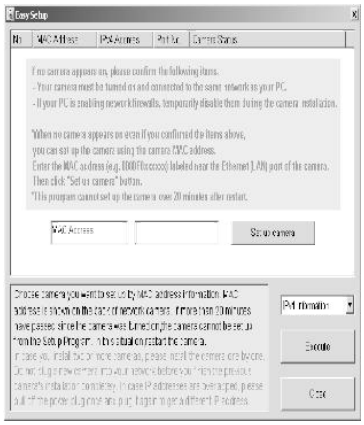
- The MAC Address on the rear side of the camera shows which camera you select on the Camera List window.

Note:

- If the indicator does not light green, check the connection.

- If more than 20 minutes have passed since the camera was turned on, the camera cannot be set up from the Setup Program. In this situation, disconnect the AC cord from the outlet, and reconnect it again.

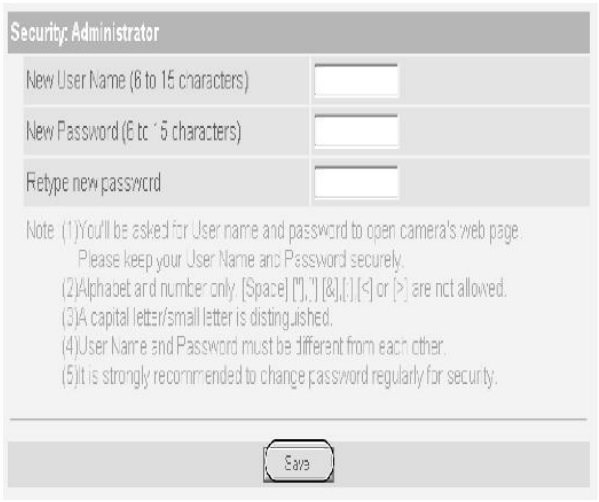
- The Setup Program may not list any cameras due to your firewall or antivirus software settings on your PC. If you cannot disable your firewall or antivirus software, you can set up the camera entering the camera MAC address on the following window. The camera's MAC address can be found on the label affixed to the back of each camera.



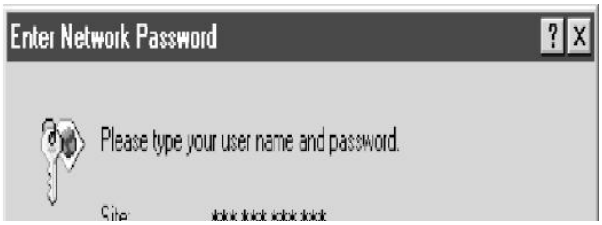
4. Click [Automatic Setup (Local Access Only)].

- For the first time installation or after pressing the FACTORY DEFAULT RESET button, only [Automatic Setup (Local Access Only)] can be selected. To set up the camera with Static or DHCP settings, after performing the [Automatic Setup (Local Access Only)], run the Setup Program again and select [Manual Setup].

5. Enter the user name and password you wish to use, and click [Save].



6. The Enter Network Password window is displayed. Enter the user name and password that were set, and click [OK].



7. When the Single Camera page is displayed,the setup is completed.

- If Security Warning window is displayed to install ActiveX Controls, click [Yes].

- To install ActiveX Controls on Microsoft Windows XP Service Pack 2, see "Security Warning window on Microsoft Windows XP Service Pack 2".

Note:
To insure that the most current image is displayed,I nternet Explorer should be configured as follows.This will not have any negative result on normal use.

1. **While viewing any website, Click [Tools] [Internet Options].**
2. **In the section "Temporary Internet Files", click [Settings] and check [Every visit to the page].**

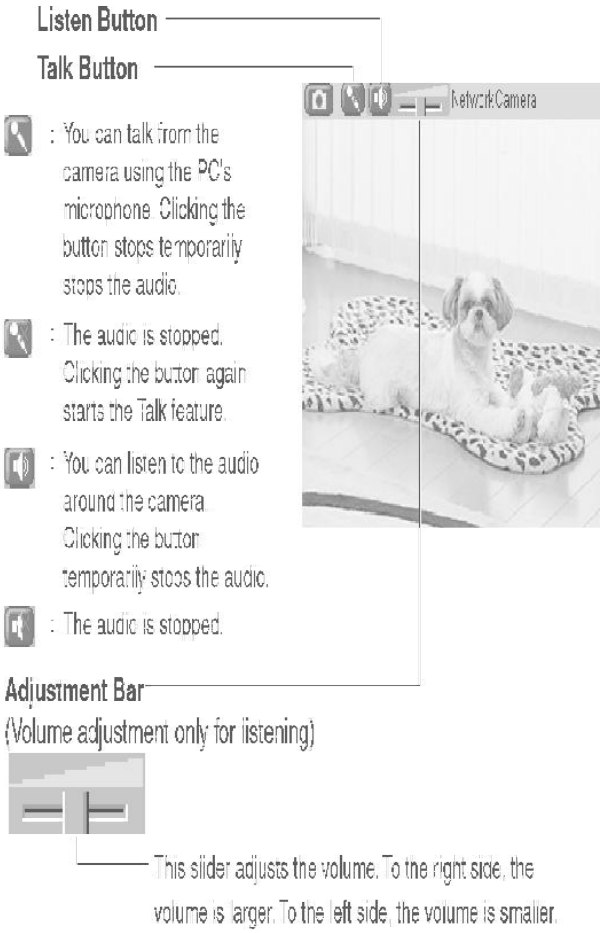
7. Click [Next] to set up the Internet access to the camera.

7.5. LISTENING TO CAMERA AUDIO - TALKING TO THE CAMERA

1. **Access the camera.**

   - The Top page is displayed.
2. **Click the [Single] tab at the top of the page.**
3. **The audio control bar is displayed at the top of the screen. Listening or Talking is selected using the 2 icons. For general sers, the feature m st be enabled, otherwise it will not be displayed.**

Audio Feature



Note:

- Talk button and Listen button cannot be used simultaneously. Talk feature is stopped during listening. Talk feature can be used only for a user. Listen feature can be sed for maximum 10 users. If the audio is interrupted, reduce the max.bandwidth. In this case, the number of users for listening are reduced.

- Audio features such as camera microphone sensitivity and mute during pan/tilt can be set up on the Audio page.

- If you are running other applications or opening multiple windows, the audio may be interrupted or delayed.

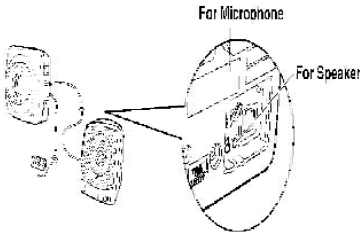
- When the image is refreshed during any operation such as preset registration or a web browser refresh, the volume is reset to the defa lt (midrange) position. Audio that was muted is enabled.

- The audio may be interrupted due to your PC's performance or network environment. Reduce the max.bandwidth.

- If the camera is accessed while the PC user visits other websites, the active microphone may pick up audio from the PC's speakers. Be

careful with it.

- Talk feature cannot be used from a PC when the camera is accessed via a proxy server.
- If you cannot listen to the audio or talk from your PC, see 2.5 Audio Problems in the Troubleshooting section of the Installation/ Troubleshooting on the Setup CD-ROM.
- If you use external microphone, excessive length or poor quality microphone cable can cause a degradation in audio quality.
- The cables for the external microphone must be less than 7 m (about 23 feet) long.
- To talk to the camera from your PC, an external amplified speaker such as the Panasonic RP-SPT70 or equivalent (customer-provided) must be connected to the camera. The speaker connects to the camera with a stereo audio cable similar to that used by your PC. Though the connector is stereo, the audio is not.



- The external microphone input terminal does not correspond to a line level.
  Audio may be distorted when the line level is input. Audio distortion will be solved if you insert the following circuits. Under no circumstance should high level audio, such as from a speaker, be connected to this input terminal. Doing so is likely to damage the camera.

8. DISASSEMBLY INSTRUCTIONS

8.1. HOW TO REMOVE MAIN BOARD AND I/O BOARD

1. Remove four Screws (B). **2. Remove Cabinet Cover.**	
3. Remove three Screws (A). **4. Remove Main Board and I/O Board from Cabinet Body.** **5. Remove Connector A, Connector B and Connector C.**	

6. Remove FFC Cable from Main Board and I/O Board.	

8.2. HOW TO REMOVE EYE BLOCK

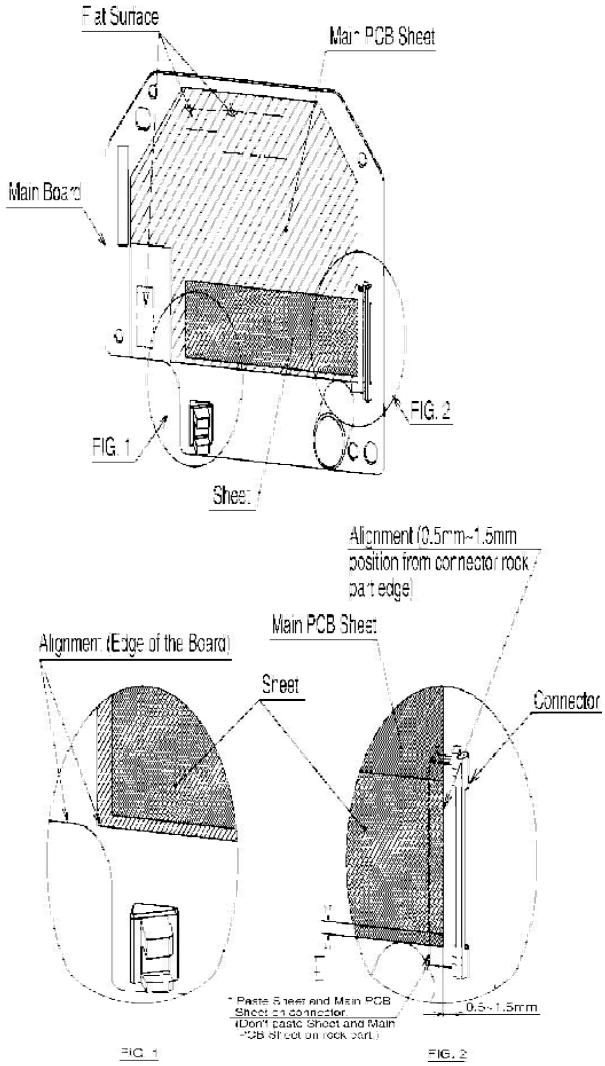
1. Remove four Screws (B). **2. Remove Cabinet Cover.**	
3. Remove three Screws (A). **4. Remove Main Board and I/O Board from Cabinet Body.** **5. Remove Connector A, Connector B and Connector C.**	

6. Remove two Screws (A). **7. Remove Pan Motor Unit, Pan Gear and Eye Block from Cabinet Body.**	

9. THE CAUTIONS AT THE TIME OF ASSEMBLY

9.1. CAUTIONS FOR SHEET ATTACHMENT

Attach the Main PCB Sheet to the Main Board and then attach the Plastic Parts to it.



Caution:

See the Figures for the position in the attachment of the Main PCB Sheet and the Sheet.

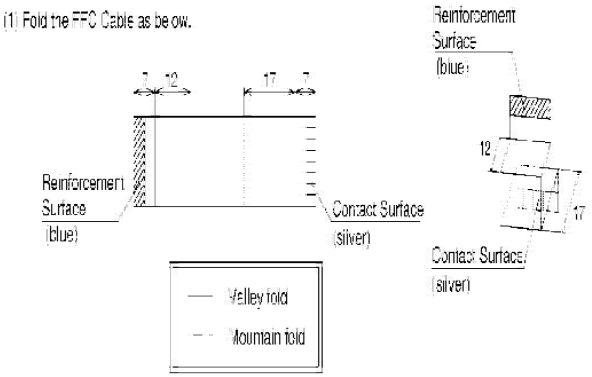
Press the Flat Surface shown in the Figure, then press the whole sheet securely to avoid peeling.

The Sheet should not cover the connector in FIG. 2.

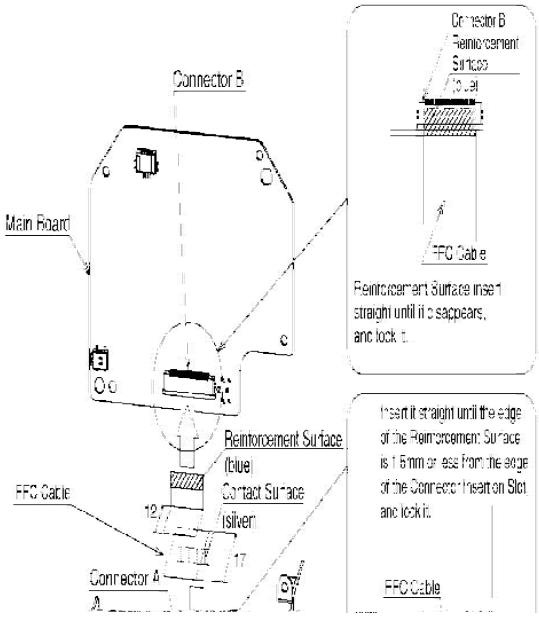
9.2. CAUTIONS FOR FFC CABLE ATTACHMENT

Process the FFC Cable to insert to the connectors of the I/O Board and the Main Board.

(1) Fold the FFC Cable as be ow.

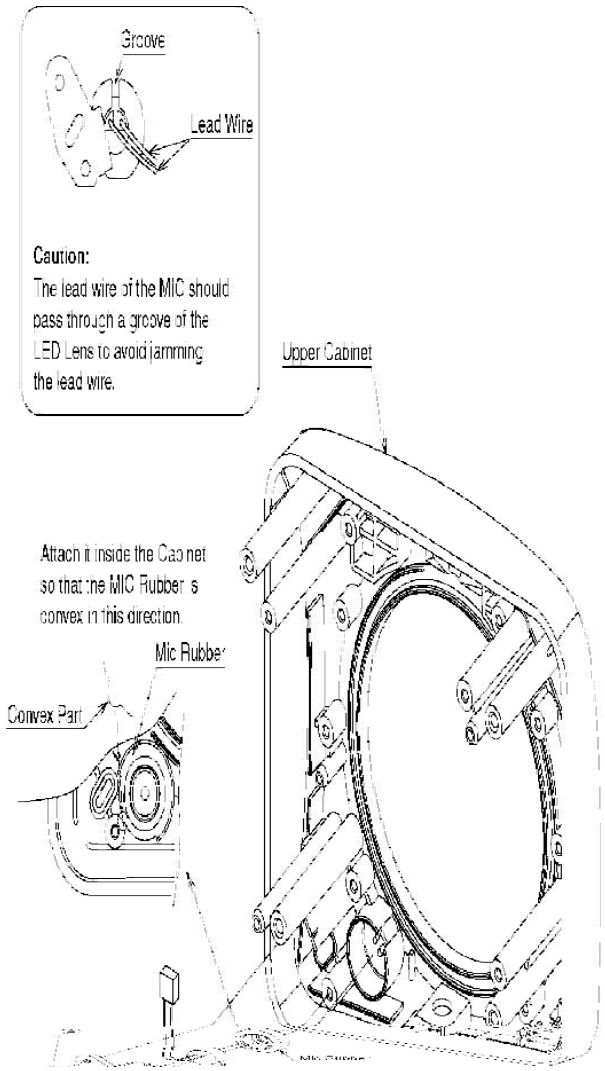


(2) Insert the processed Lead Wire into Connector A of the IC Board and Connector B of the Main Board.



9.3. CAUTIONS FOR MIC ATTACHMENT

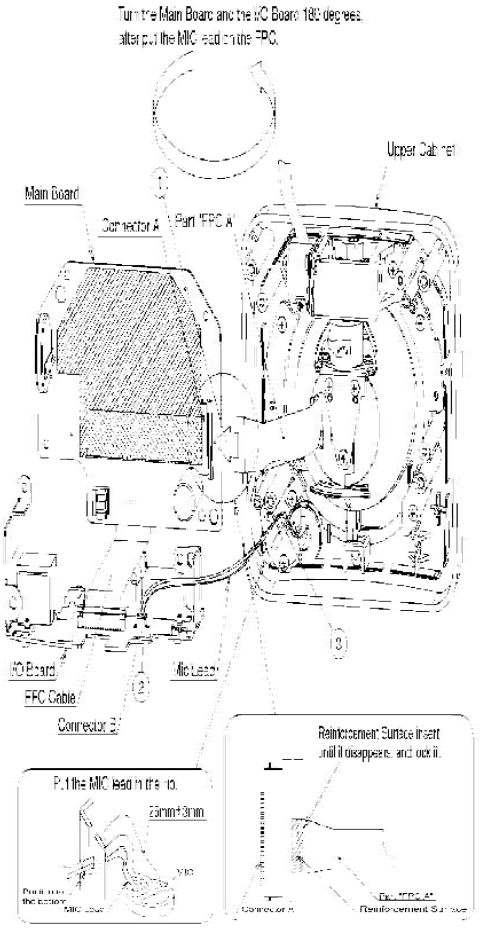
Insert the MIC Rubber, the MIC and the LED Lens into the Upper Cabinet and fix them with the Screws (A).



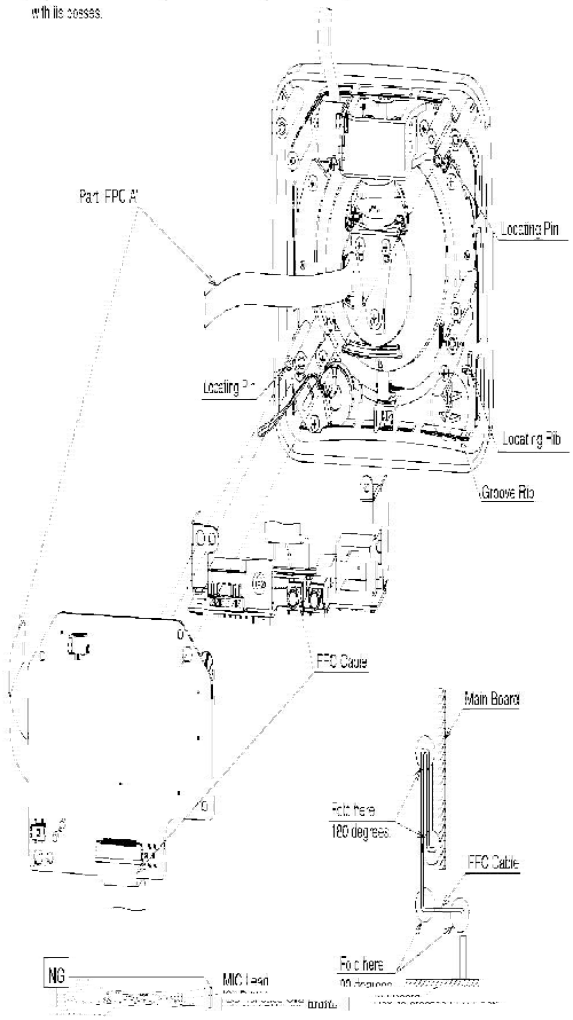
9.4. CAUTIONS FOR MAIN BOARD ATTACHMENT

Attach the component that connects the Main Board and the I/O Board with the FFC Cable, to the Upper Cabinet and fix it with the Screw (A).

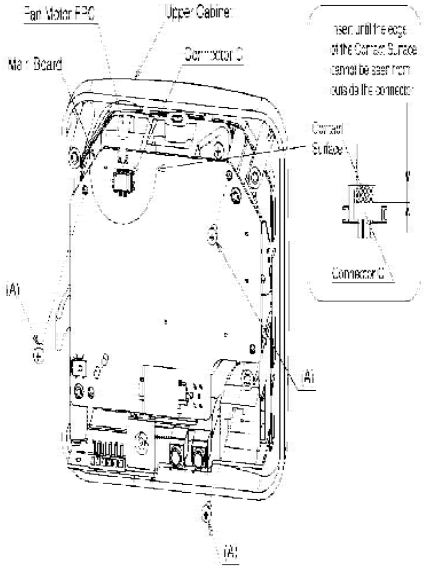
(1) ① Insert Part "FPC A" to Connector A of the component that connects the Main Board and the I/O Board with the FFC Cable, and lock it.
② Connect the MIC lead to Connector 3 of the Board.
③ Put the MIC lead in the rib and turn the Main Board and the I/O Board 180 degrees.



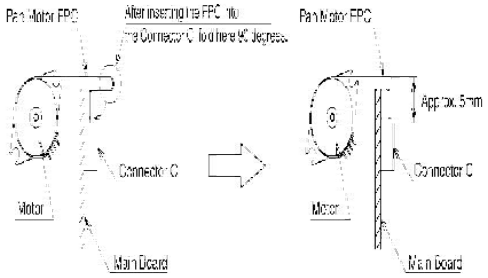
(2) Align the MC Board with the groove rib and locating bosses of the Upper Cabinet and the holes of the Main Board with its bosses.



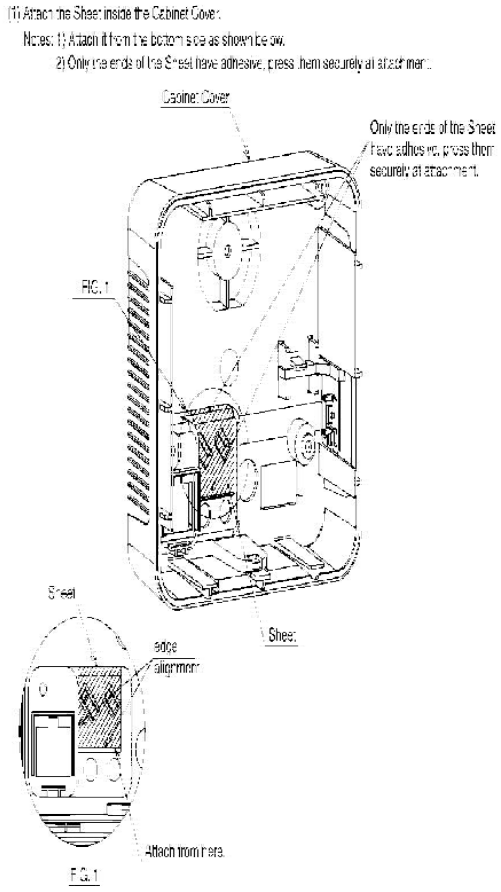
(3) Fix the Main Board to the Upper Cabinet with the Screws (A).
(4) Insert the Fan Motor FPC to Connector C.



Caution:
How to process the Fan Motor FPC

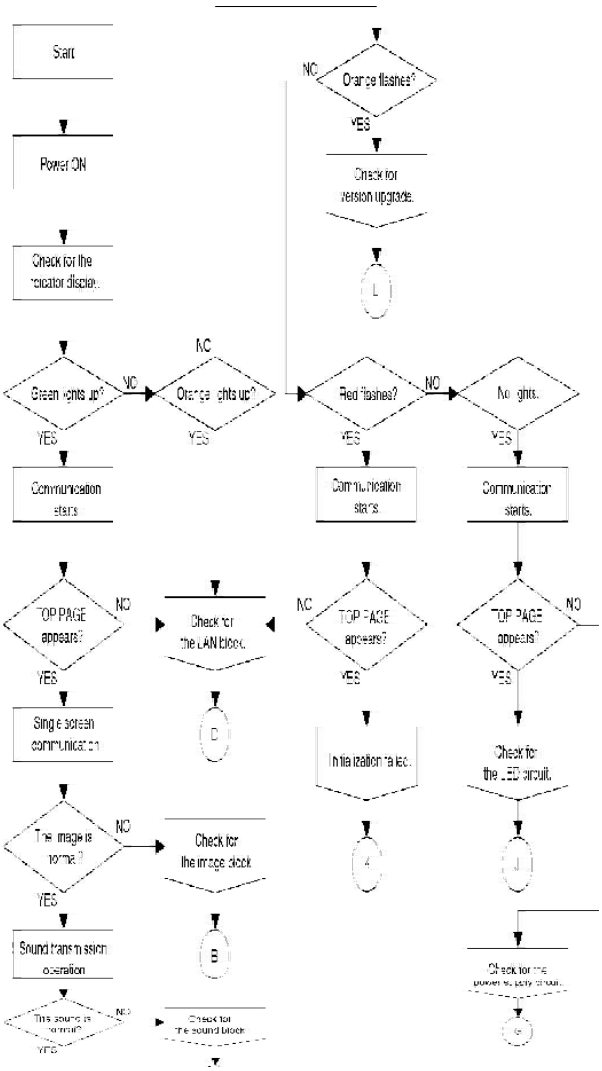


9.5. CAUTIONS FOR PLASTIC PATS ATTACHMENT

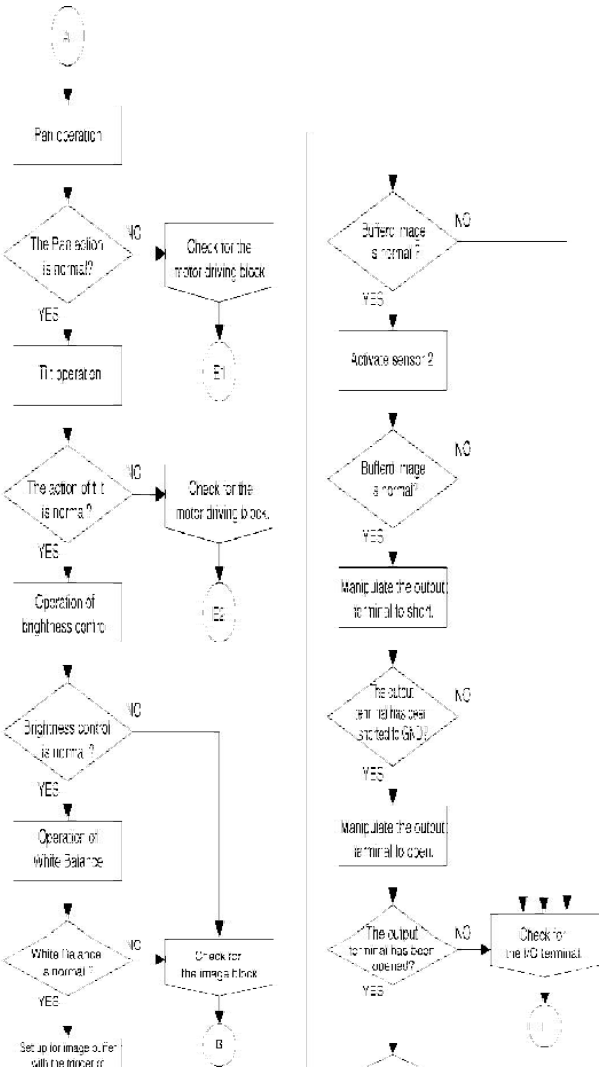


10. TROUBLE SHOUTING

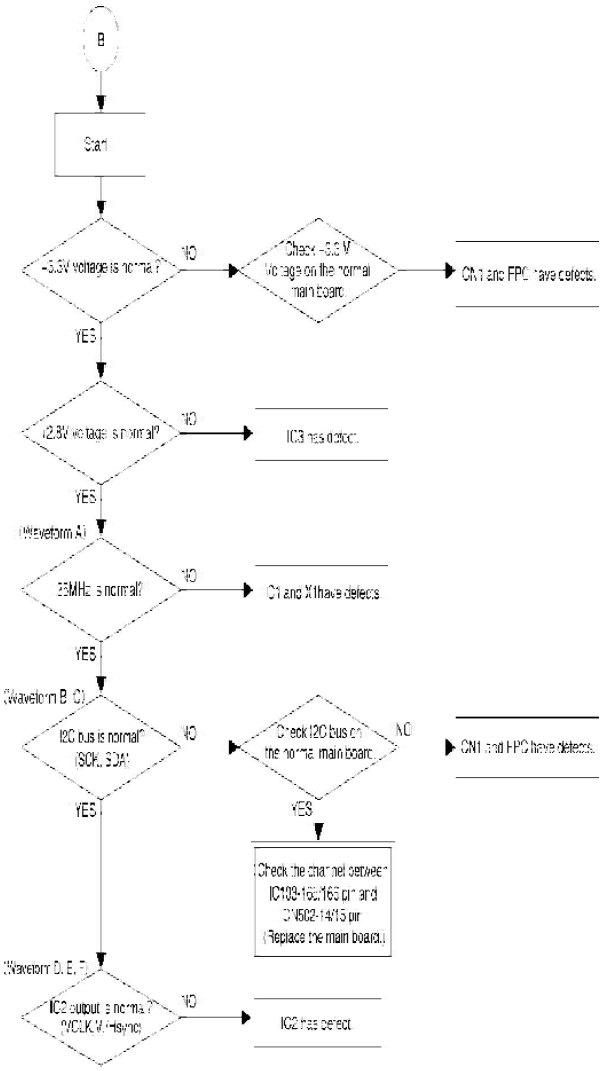
10.1. BASIC OPERATION



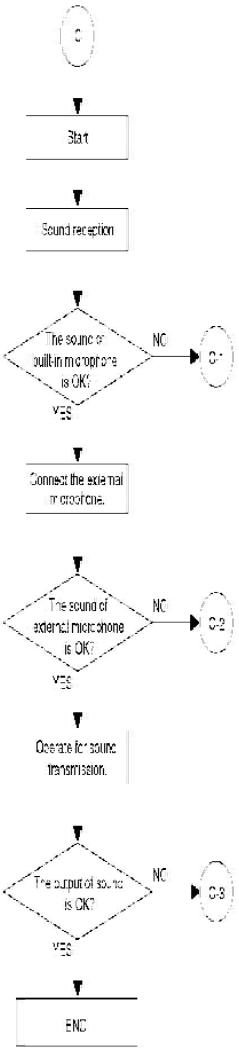
10.2. CHECK FOR OTHER FUNCTION



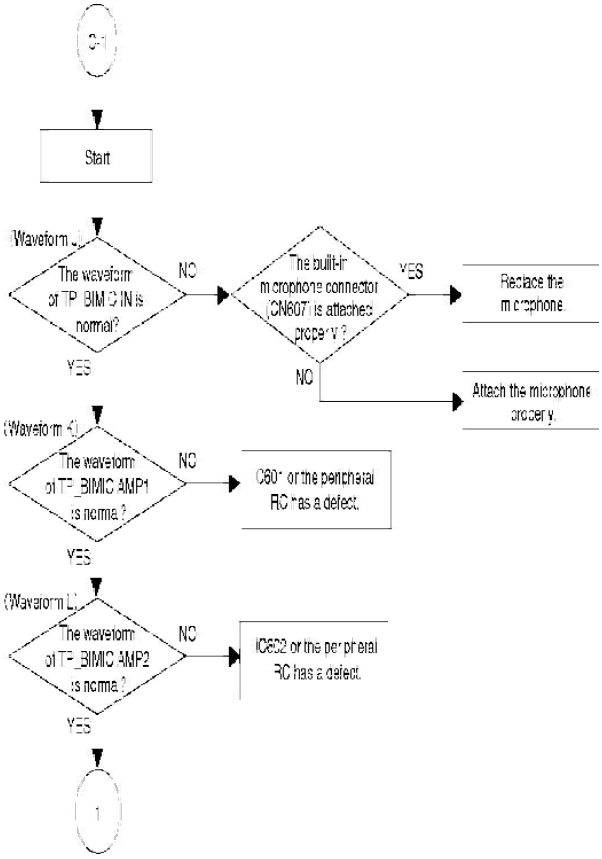
10.3. CHECK FOR SCREEN BLOCK



10.4. CHECK FOR SOUND BLOCK

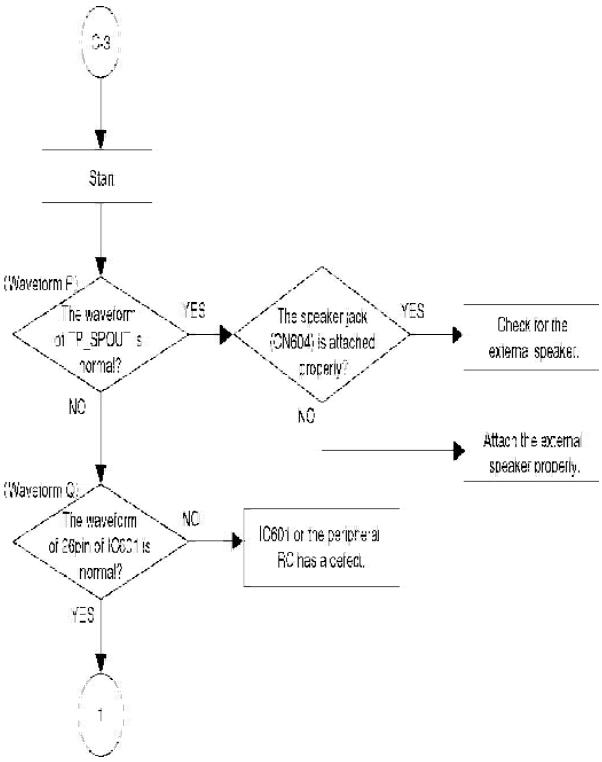


10.4.1. Built-in Microphone

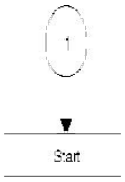


10.4.2. External Microphone

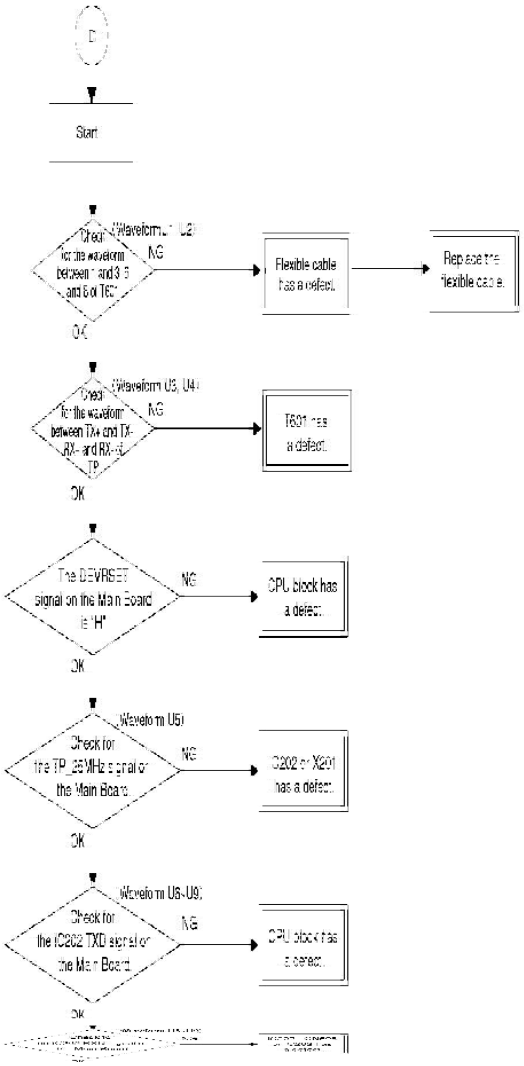
10.4.3. Speaker Output



10.4.4. Common Flow Of Built-in Microphone, External Microphone And Speaker Output

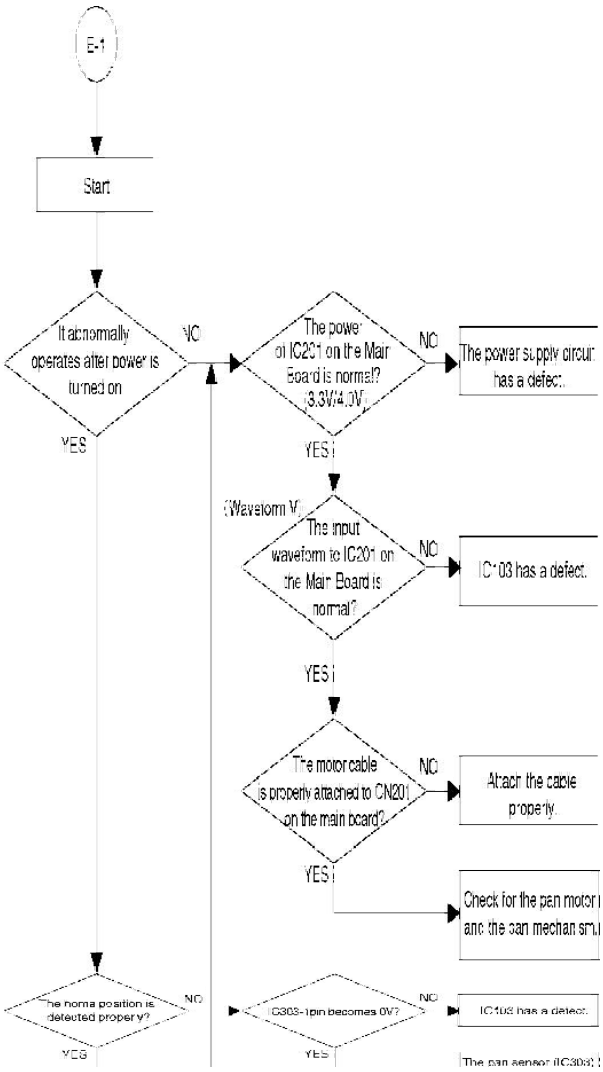


10.4.5. Check For LAN Block

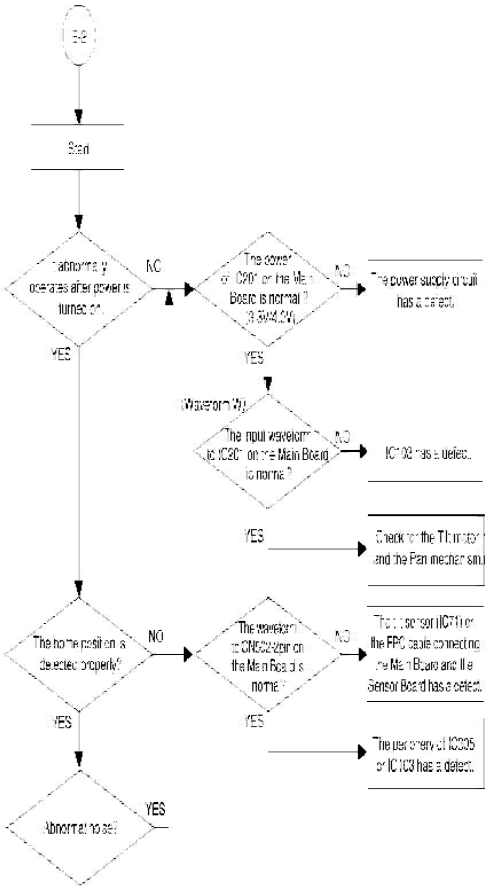


10.5. CHECK FOR MOTOR DRIVING BLOCK

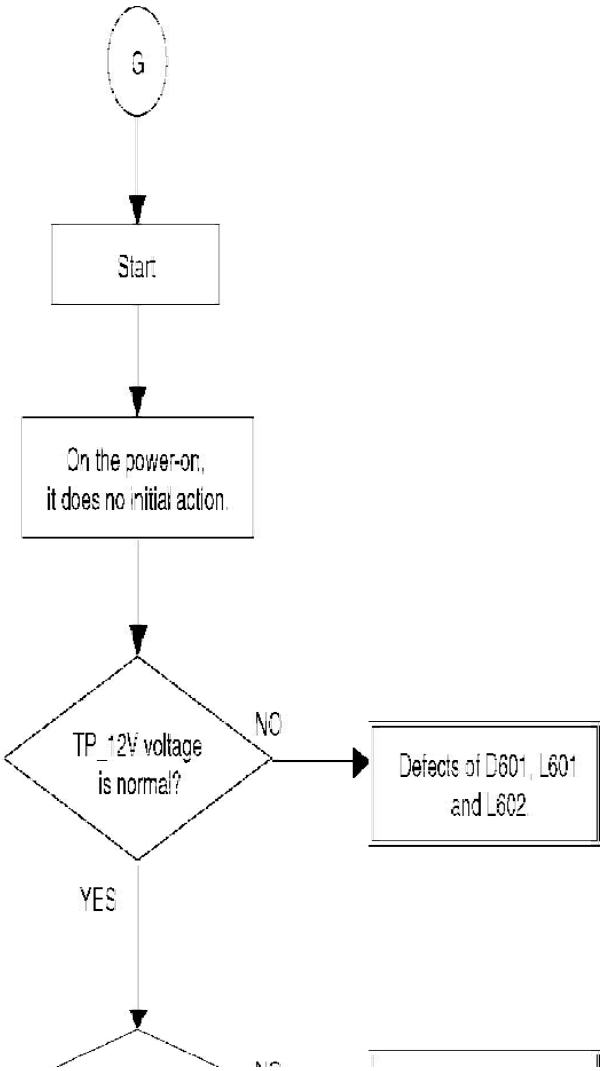
10.5.1. Check For The Action Of Pan

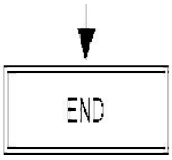


10.5.2. Check For The Action Of Tilt

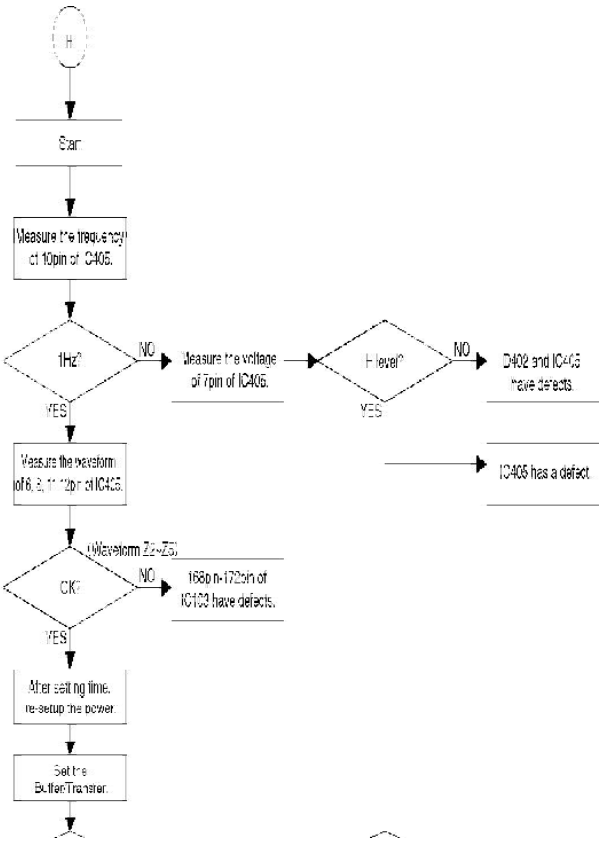


10.6. CHECK FOR POWER SUPPLY BLOCK

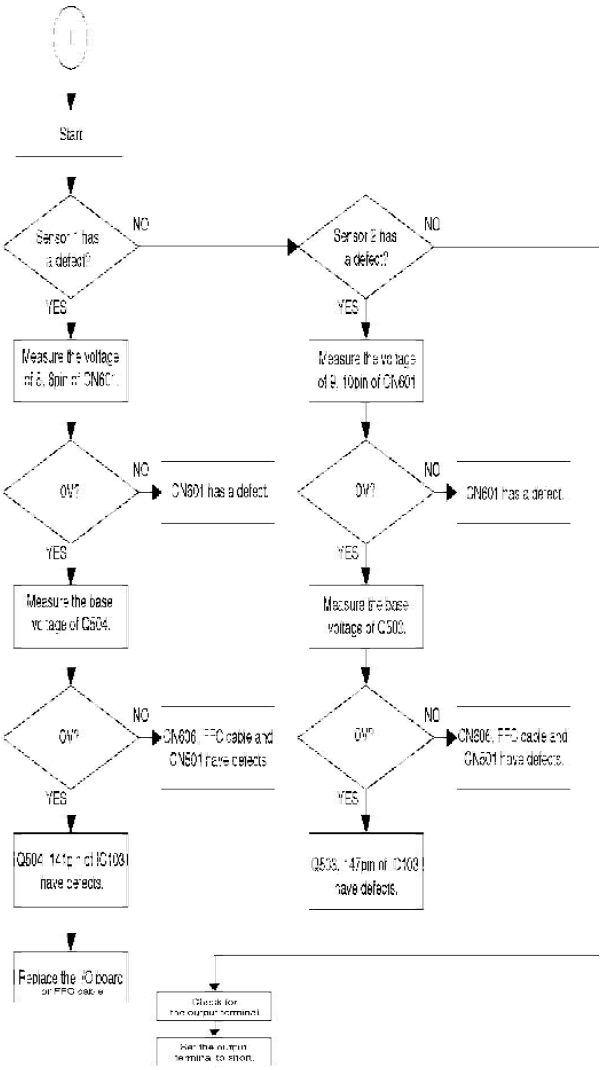

G
Start
On the power-on, it does no initial action.
TP_12V voltage is normal?
NO
Defects of D601, L601 and L602
YES



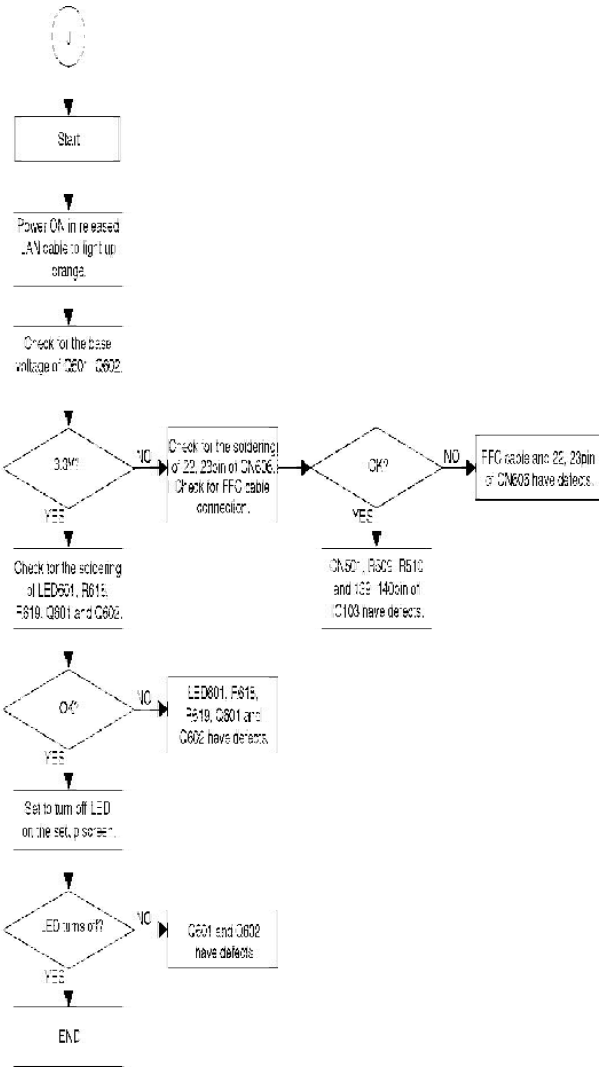
10.7. CHECK FOR RTC CIRCUIT



10.8. CHECK FOR I/O TERMINAL

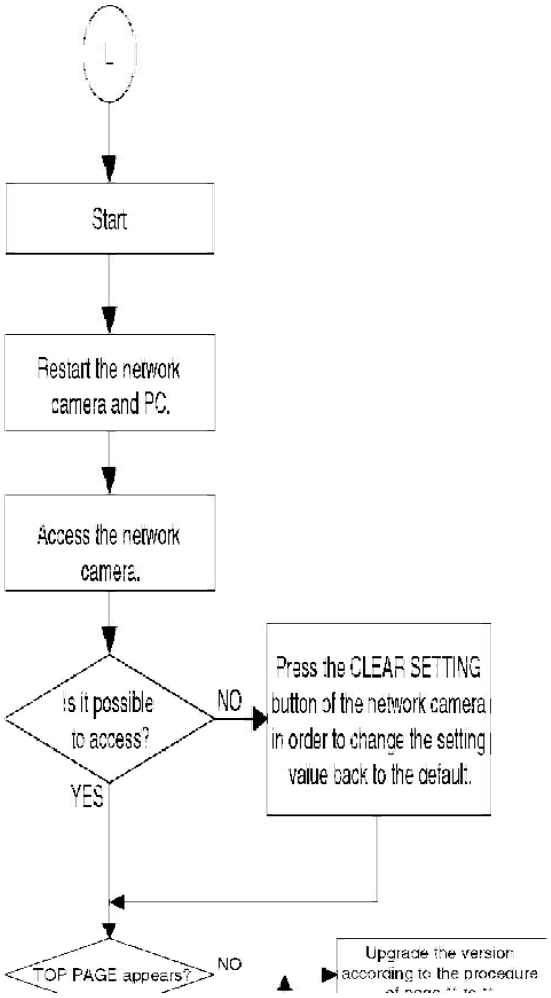


10.9. CHECK FOR LED CIRCUIT



10.10. CHECK FOR INITIALIZATION

10.11. CHECK FOR VERSION UPGRADE



11. THE WAY OF THE INITIALIZE

11.1. FACTORY DEFAULT RESET BUTTON

The camera has a Factory Default Reset button on the rear.

Pressing the Factory Default Reset button resets the camera to factory default.
If you lose your user name and password, use this button to reset the camera.

- **Press the Factory Default Reset button for 1 second when the camera is on.**
- **The indicator blinks orange, and turn off for 10 seconds.**
- **Do not turn off the camera until the indicator lights green.**

Note:

- **Internal clock will not be reset, but the time format will return to AM/PM mode. Set it again.**
- **All buffered images are deleted when resetting the camera to factory default.**
- **The reset operation takes about 1 minute.**

11.2. RESETTING THE CAMERA TO FACTORY DEFAULT

This feature will be executed and all camera settings reset to factory default directly after the Execute button is clicked.

1. Click [Reset to Factory Default] on the Maintenance page.
2. Click [Execute].

- **The indicator blinks orange, and turn off for 10 seconds.**
- **All camera settings (user name, password, IP address, subnet mask etc.) are reset to factory default.**
- **If the camera is reset to factory default, the network connection modechanges to [Automatic Setup]. Reconfigure the camera seeing the Getting Started.**

Note:

- **Internal clock will not be reset, but the time format will return to AM/PM mode. Set it again.**
- **Please refer to Operating Instructions for default values.**
- **Pressing FACTORY DEFAULT RESET button resets the camera to the factory default.**
- **All buffered images are deleted when resetting the camera to factory**

default.
- The reset operation takes about 1 minute.
- Do not turn off the camera during the reset operation.

12. NETWORK CAMERA KX-HCM110A BLOCK DIAGRAM

13. CIRCUIT DESCRIPTION

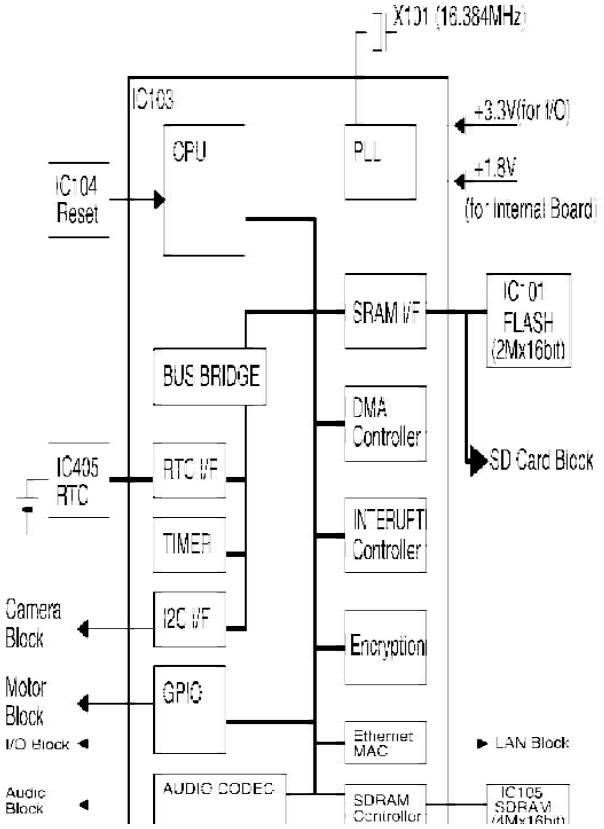
13.1. CPU PERIPHERAL BLOCK

- The IC103 is a system LSI for a network camera containing the CPU
- The power supply voltages are +3.3V (I/O) and +1.8V.
- The CPU is a 32-bit RISC CPU and performs mainly hardware control, TCP/IP protocol processing and applications such as http and FTP.
- The clock setting is 65.536MHz, which is the four times of 16.384MHz oscillation in the X101 by PLL.
- There are two types of external bus: the General-purpose bus through SRAM I/F and the bus for SDRAM only.
- The General bus is connected to a Flash Memory for program storage.
- The capacity of the Flash Memory (IC101) is 32Mbit (2Mx16bit); the program, the setting information for the network camera and the MAC address are stored.
- The SDRAM (IC105) is 64Mbit (4Mx16bit) and used for the CPU processing work, the communication data storage and the sound and image data storage.
- The RESET IC (IC104) monitors the power supply voltage, detects the rising edge of +3.3V and generates the Hardware Reset Signal.
- The IC405 is a RTC (Real Time Clock) and is used for the time setting of the image transfer. It is backed up at power-off by a lithium battery (BAT401). The I/F with the CPU has a dedicated controller. (5-line I/F)
- The Encryption block inside the IC103 is an Ipsec communication encryption engine and is used at the software protocol processing.

Signal Flow

1. When a request from the PC is received through LAN, the CGI command is analyzed at the CPU and the requested image/sound data are generated.
2. The JPEG image and sound data accumulated on the SDRAM are formed in IP packet by the protocol processing.

3. If the Ipsec is not encrypted, it is sent without change. If it is encrypted, this is carried out in the Encryption Block and a header is added to send to the Ethernet MAC part.



13.2. CAMERA BLOCK

<Basic Circuit Operation>

With a 0.35umCMOS process, this CMOS image sensor is composed of one chip that integrates the sensor assembly with the image processing DSP. Individual pixels composed of four transistors have micro-lenses to increase sensitivity, and light energy is converted to analog voltage. After that, the analog pixel voltage is converted to digital in a 10-bit AD Converter (ADC), at which time Correlated Double Sampling (CDS) dramatically reduces Fixed Pattern Noise (FPN).

The digitized analog pixel voltage data is gamma and color corrected, goes through color space conversion, and with PCLK, Hsync, and Vsync employed as timing interface signals, YUV is sequentially output digitally in 8-bit wide format. Image processing functions such as Auto-Iris (AE) and Auto White Balance (AWB) are built in and controlled automatically according to an internal algorithm in the chip.

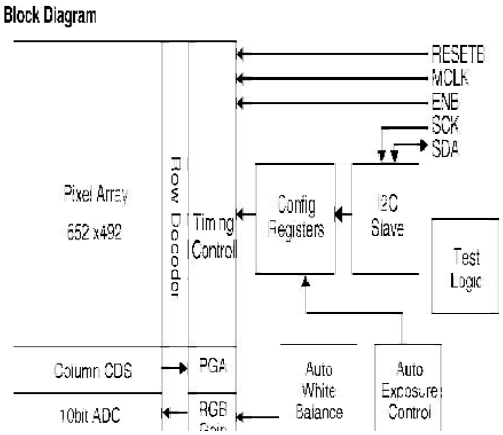
Auto-Iris (AE) is controlled by the shutter speed.

Registry settings are performed in I2C<SCK, SDA> (IC2:22/23 pin) by the CPU (IC103) on the CPU board.

CMOS Color Image Sensor (IC2)
CMOS Color Image Sensor (IC2)
Operating voltage: +2.8V

- E+2.8VA: Analog block voltage
- E+2.8VD: Digital block voltage

Package:40pin CLCC
Image sensor and image-processing circuit embedded
Total pixels: 652 ~492 pixels
Effective pixels: 652~488 pixels
Image area: 1/4inch optical format
Color filter: RGB Bayer format
Input clock: 25MHz (To be supplied through the oscillation circuit in IC1 and X1.)

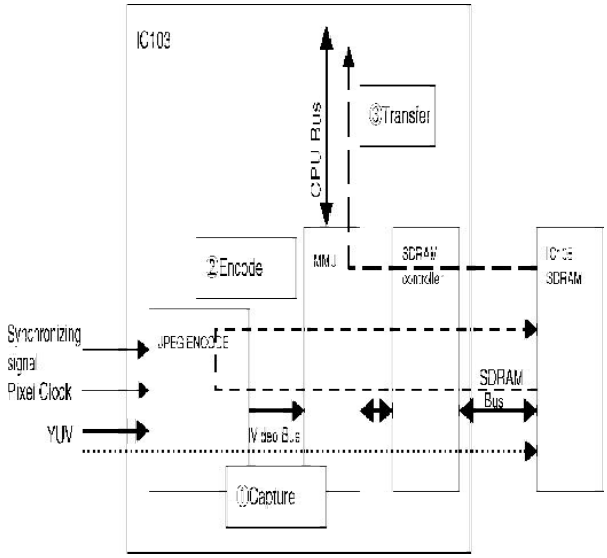


13.3. JPEG BLOCK

- The IC103 is a system LSI for a network camera containing the CPU.
- The JPEC Encode Circuit, the Memory Management Unit(MMU) and the SDRAM Controller are built into this LSI.
- The image data(YUV) inputted from a Camera Block is captured to the SDRAM through the JPEG Encode Block, the MMC and the SDRAM Controller. (1)
- The captured YUV data are inputted to the JPEG Encode Block again

and the JPEG processing is performed here. The compressed encode data are stored to the SDRAM. (2)

- A header is added to the encoded JPEG data by a direction of the CPU and it is transferred to a network after a protocol processing. (3)



13.4. SOUND BLOCK

External Microphone Jack (CN603)

Used with the external microphone.

Speaker Jack (CN604)

Used when connecting a speaker with a built-in amplifier, when the sound is output from a camera.

Microphone Detection (Q603)

When the external microphone plug is not inserted, pins 3 and 2 of the Microphone Jack (CN603) are short-circuited and a base current is supplied to Q603 through R603, R632 and R629 so that the Q603 goes ON and a collector (MIC_S signal) goes LOW. Alternatively, when the microphone plug is inserted, pins 3 and 2 of the CN603 become open so that the Q603 goes OFF and the MIC_S signal goes HIGH. From this signal, the CPU detects the microphone status.
The CPU turns the microphone SW on and off in the PCM Codec (IC601) for the external or the built-in microphone, as appropriate.

ALC Amplifier (IC602: For the built-in microphone, IC603: For the external microphone)

Power Supply: 3.3V

Amplifier for Auto Level Control

PCM Codec (IC601)

Power Supply Voltage: 3.3V
Clock Frequency: Contains a built-in PLL function and generates a clock from the BCLK (256 KHz). Contains an amplifier, LPF, gain adjustment, AD/DA converter, host I/F, PCM serial I/F and speaker output function.

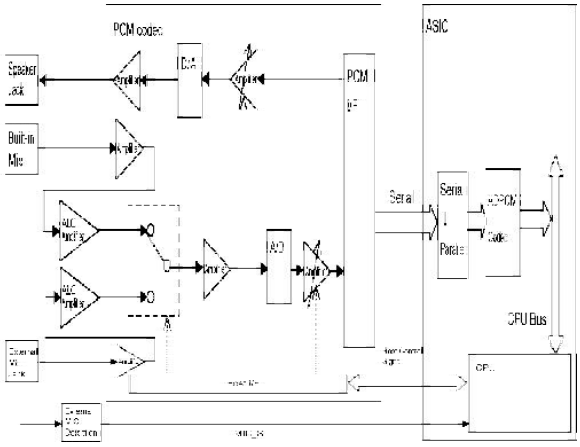
Flow of Sound Signal

[Microphone sound]

1. **The sound data input from pin 1 of the built-in microphone connector (CN607) is amplified by the amplifier in the PCM Codec (IC601) and the ALC (IC603), then input as the built-in microphone to the PCM Codec (IC601) again.**
   When the level of the input sound signal is more than the specified value, the gain is changed and the output signal level is kept constant at the ALC (IC603). Sound distortion is controlled when the input is excessive.
2. **When the external microphone is attached to the microphone jack (CN603), the sound signal input from pin 2 of the CN603 is amplified by the amplifier in the PCM Codec (IC601) and the ALC (IC602), then input as the external (microphone) to the PCM Codec (IC601) again**
   The ALC (IC602) works in the same way as the IC603.
3. **In the PCM Codec (IC601), after the sound signal is switched between the built-in microphone and the external microphone by a register setting from the host, amplification, AD conversion and gain adjustment are performed.**
   The sampling frequency of the A/D conversion is 8kHz and it is converted to the PCM in the format of 8bit and law. Then, 64kbps data are output to the ASIC (101) through the Serial I/F.
   The data transfer of the Serial I/F is BCLK (256 kHz).
4. **The data compression of 32kbps is performed in the ADPCM Block of the ASIC (101) and the data transferred as sound data.**

[Speaker Sound]

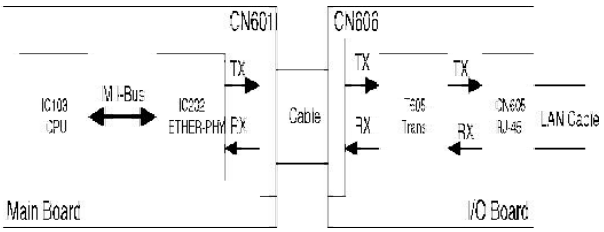
1. **The ADPCM sound data are sent from the PC and, after data decompression in the ADPCM block of the ASIC (101), the data are transferred as the sound data of 64kbps to the PCM Codec (IC601) through the Serial I/F.**
2. **After the μ law to linear conversion, amplification and DA conversion, they are output to pin 2 of the speaker jack (CN604) as sound output signal in the PCM Codec (IC601).**



13.5. LAN BLOCK

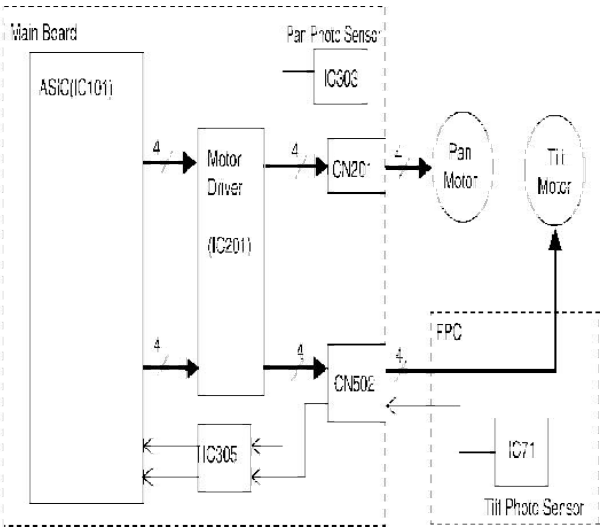
Composed of the IC103 (CPU), the IC202 (ETHER-PHY), the T601 (Transformer) and the CN605 (RJ45).
The T605 (Transformer) obtains isolation between the Set and the Ethernet.
The IC103 (CPU) and the IC202 (ETHER-PHY) are connected by a signal called MIIBus and it makes Ether net data sending and receiving possible.

Sending
The electrical signal sent from the IC103 is converted to Ethernet data at the IC202 and sent from the CN605 through the T601.
Receiving
The Ethernet data received from the CN605 is converted to electrical data at the IC202 and received to the IC103.

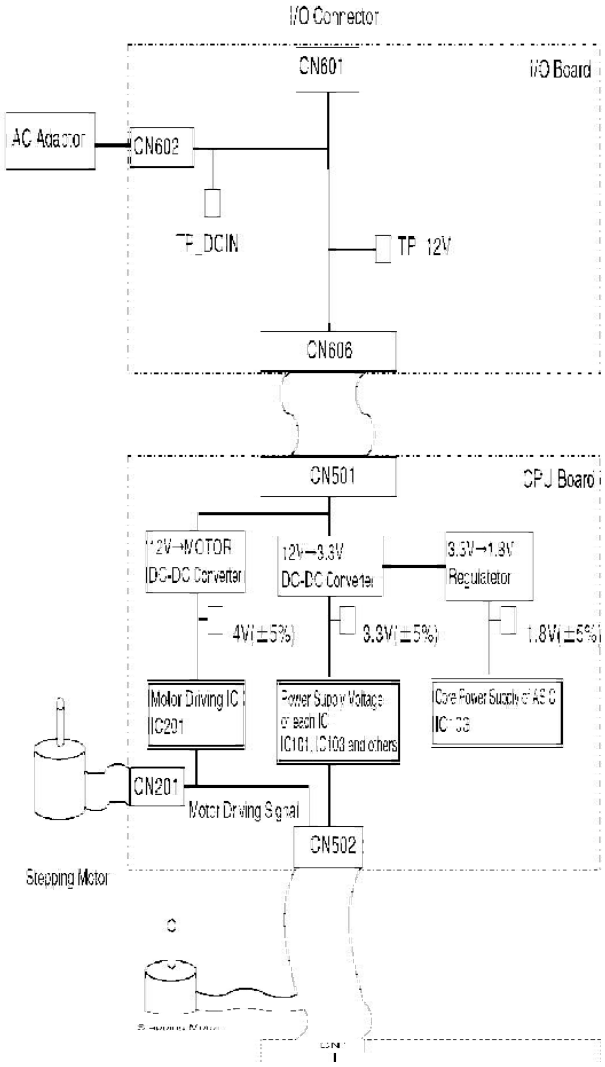


13.6. MOTOR DRIVING BLOCK

The pan tilt is performed, as the ASIC (IC101) mounted on the Main Board controls the Motor Driver (IC201). The home position of the pan tilt operation is detected by the Pan Photo Sensor (IC303 on the Main Board) and the Tilt Photo Sensor (IC71 on the Sensor FPC).



13.7. POWER SUPPLY BLOCK



13.8. OTHERS

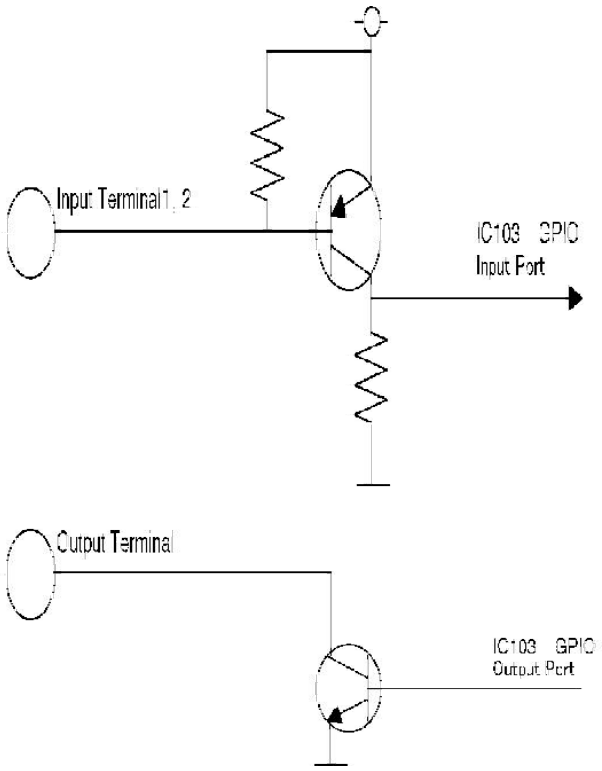
13.8.1. I/O Terminal

- The Input terminal has two systems; both of them are connected to the Input Port of the IC103 GPIO.

- Due to Internal Pull-up Resistance, the PNP Transistor (Q504, Q503) on the following level is usually in the OFF state and the Input Port connected to the collector is at L level.

- If the terminal is short-circuited with the GND or the signal of L level is input, the PNP Transistor goes ON and the Input Port goes to H level.

- The CPU checks the state of this port regularly to detect a change in this signal.
- The Output terminal is controlled by the Output Port of the IC103. When the Port output is L, the transistor (Q501) on the following level is OFF and, when the output is H, the transistor is ON. This transistor has open collector output and it controls external equipment via external pull-up.



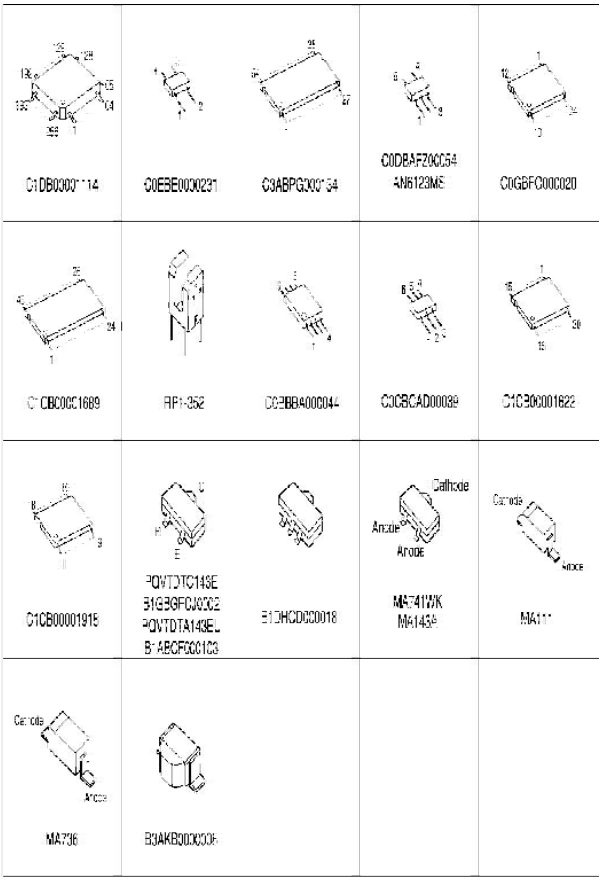
13.8.2. Clear Setting SW

- The Clear Setting SW (SW101) is connected to the Input Port of the GPIO. It is usually at H level and goes to L level, when the SW is pressed.
- The CPU monitors this Input Port regularly and, if it detects that this SW is pressed longer than a specified period, the setting values other than the RTC are returned to factory settings.

13.8.3. LED

- The LED (LED601) has two-color LEDs (red and green). When the transistor (Q601, Q602) connected to each LED is turned ON/OFF via the Output Port of the IC103, it controls the ON/OFF of the LED.

14. TERMINAL GUIDE OF ICS, TRANSISTORS AND DIODES



15. HOW TO REPLACE A FLAT PACKAGE IC

15.1. PREPARATION

- PbF (: Pb free) Solder

- Soldering Iron

Tip Temperature of 700°F ± 20°F (370°C ± 10°C)

Note: We recommend a 30 to 40 Watt soldering iron. An expert may be able to use a 60 to 80 Watt iron where someone with less experience could overheat and damage the PCB foil.

- Flux

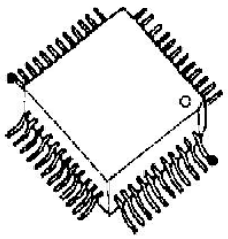
Recommended Flux: Specific Gravity 0.82.

Type RMA (lower residue, non-cleaning type)

Note: See ABOUT LEAD FREE SOLDER (PbF: Pb free) ().

15.2. PROCEDURE

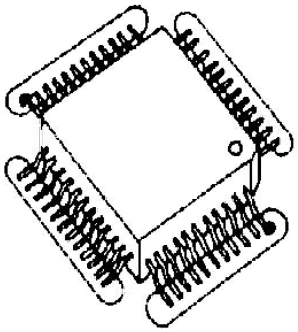
1. Tack the flat pack IC to the PCB by temporarily soldering two diagonally opposite pins in the correct positions on the PCB.



Temporary soldering point.

Be certain each pin is located over the correct pad on the PCB.

2. Apply flux to all of the pins on the IC.



Flux

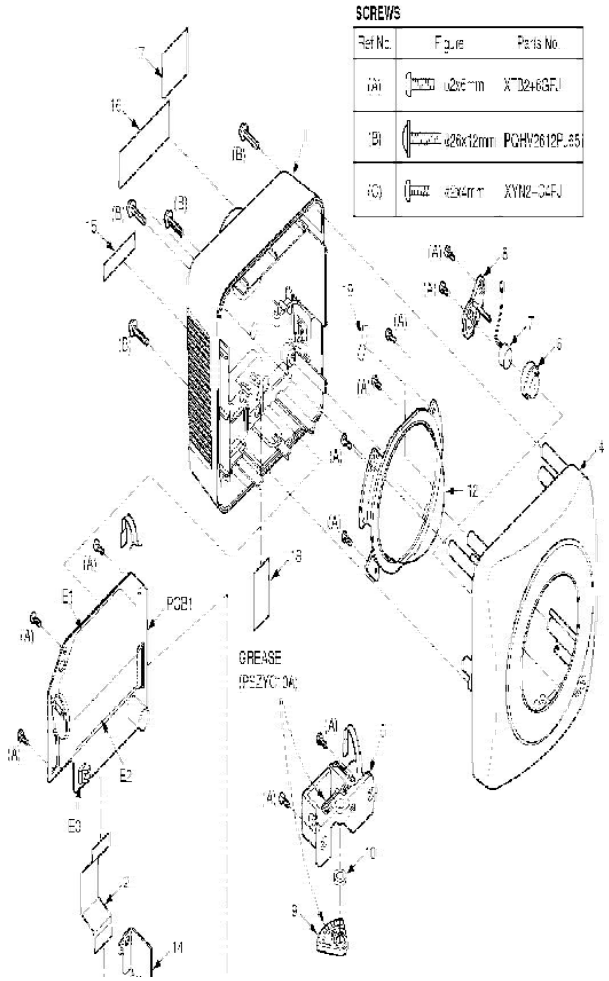
3. Being careful to not unsolder the tack points, slide the soldering iron along the tips of the pins while feeding enough solder to the tip so that it flows under the pins as they are heated.

15.3. REMOVING SOLDER FROM BETWEEN PINS

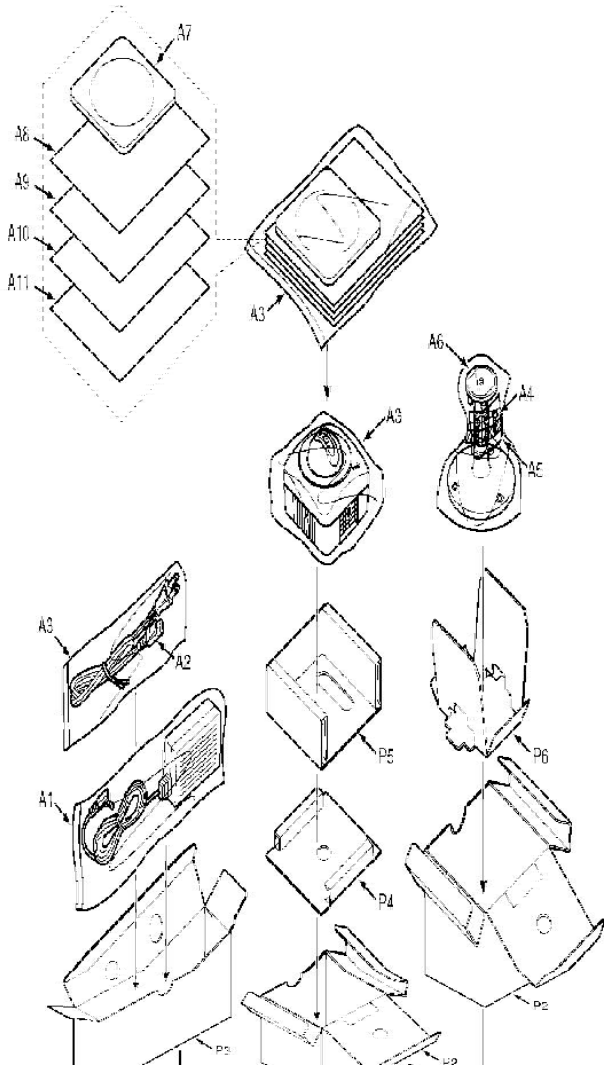
1. Add a small amount of solder to the bridged pins.

2. With a hot iron, use a sweeping motion along the flat part of the pin to draw the solder from between the adjacent pads.

16. CABINET AND ELECTRICAL PARTS LOCATION



17. ACCESSORIES AND PACKING MATERIALS



18. REPLACEMENT PARTS LIST

Note:

1. **RTL (Retention Time Limited)**
   The marking (RTL) indicates that the Retention Time is limited for this item.
   After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability depends on the type of assembly and the laws governing parts and product retention. At the end of this period, the assembly will no longer be available.
2. **Important safety notice**
   Components identified by the ⚠ mark indicates special characteristics important for safety. When replacing any of these components, only use specified manufacture's parts.
3. **The S mark means the part is one of some identical parts. For that reason, it may be different from the installed part.**
4. **ISO code (Example: ABS-94HB) of the remarks column shows quality of the material and a flame resisting grade about plastics.**
5. **RESISTORS & CAPACITORS**
   Unless otherwise specified;
   All resistors are in ohms (Ω), k=1000 , M=1000k
   All capacitors are in MICRO FARADS (F), p= (F)
   ***Type & Wattage of Resistor**

18.1. CABINET AND ELECTRICAL PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
1	PSYF1057Y1	CABINET COVER	ABS+PC-V0
2	PSJE1043Z	LEAD WIRE,FFC CABLE	
3	PSWEHCM110N	MECHANISM ASS Y,EYE BLOCK	ABS-V0
4	PSKM1116T1	CABINET BODY	ABS+PC-V0
5	PSWQHCM110N	PAN MOTOR UNIT	
6	PSMG1007Z	RUBBER PARTS,MIC	
7	PSJM1006Z	MICROPHONE	
8	PSHR1322Y	OPTIC CONDUCTIVE PARTS,LED LENS	
9	PSHR1318Z	PAN GEAR	POM-HB
10	PSNPD050080	SPACER	
11	PSNPD050080	SPACER	
12	PSKV1041Z	COVER,DOME	PC-HB
13	PSMH1278Z	CHASSIS	
14	PSMH1277Z	CHASSIS	
15	PSQA2830Z	LABEL,CAUTION	
16	PSGT2663Z	NAME PLATE	
17	PSQT2107Z	LABEL,FCC CAUTION	
18	PSHX1256Z	PLASTIC PARTS,SHEET	
19	PSHX1262Z	SHEET, DOME	

18.2. ACCESSORIES AND PACKING MATERIALS

Ref. No.	Part No.	Part Name & Description	Remarks
A1	PQLV202Y	AC ADAPTOR	
A2	PSJA1069Z	POWER CORD	
A3	XZB20X30A05	PROTECTION COVER(FOR CD-ROM ETC.)	
A4	PQHE5004Y	WOOD SCREW	
A5	XZB05X08A03	PROTECTION COVER(FOR SCRES)	
A6	PSKL1020W	STAND	
A7	PSQX3637ZCD	INSTRUCTION BOOK,CD-ROM	
A8	PSQW2225Z	LEAFLET,I/O COUTION	
A9	PSQW2285Z	LEAFLET,RECORD SOFT	
A10	PSQX3636Z	INSTRUCTION BOOK,GETTING STARTED	
A11	PSQX3768Z	INSTRUCTION BOOK,INSTALLATION	
P1	PSPK2322Z	GIFT BOX	
P2	PSPN1177Z	ACCESSORY BOX	
P3	PSPN1176Z	ACCESSORY BOX	
P4	PSPD1302Z	CUSHION	
P5	PSPD1299Z	CUSHION	
P6	PSPD1322Z	CUSHION,STAND	
P7	PQXDDS400-8	SECURITY TAG	

18.3. MAIN BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB1	PSWP1HCM110A	MAIN BOARD ASS'Y (RTL)	
		(ICS)	
IC103	C1DB00001114	IC	
IC104	C0EBE0000231	IC	
IC105	C3ABPG000134	IC	
IC201	C0GBF0000020	IC	
IC202	C1CB00001689	IC	
IC303	RPI-352	IC	S
IC305	C0BBBA000044	IC	
IC403	C0DBAFZ00054	IC	
IC404	C0DBAFZ00054	IC	
IC405	C1CB00001918	IC	
IC407	C0CBCAD00039	IC	
		(TRANSISTORS)	
Q301	PQVTDTC143E	TRANSISTOR(SI)	S
Q401	B1DHCD000018	TRANSISTOR(SI)	
Q402	B1DHCD000018	TRANSISTOR(SI)	
Q501	B1GBGFCJ0002	TRANSISTOR(SI)	
Q503	PQVTDTA143EU	TRANSISTOR(SI)	S
Q504	PQVTDTA143EU	TRANSISTOR(SI)	S
		(DIODES)	
D401	MA111	DIODE(SI)	S
D402	MA741WK	DIODE(SI)	S
D403	MA736	DIODE(SI)	S
D404	MA736	DIODE(SI)	S
DA301	MA143A	DIODE(SI)	S
		(BATTERY)	
BAT401	CR2032/1VC1	LITHIUM BATTERY	
		(CAPACITORS)	
C103	F1J0J1060006	10	
C104	ECUV1H101JCV	100p	
C105	ECUV1C104ZFV	0.1	
C110	ECUV1H180JCV	18p	
C111	ECUV1H200JCV	20p	
C112	PSCU1AV105ZF	1	S
C113	ECUV1C104ZFV	0.1	
C114	F1J0J1060006	10	
C115	ECUV1C104KBV	0.1	
C117	ECUV1C104ZFV	0.1	
C118	ECUV1C224ZFV	0.22	
C120	ECUV1C104ZFV	0.1	
C121	ECUV1E103KBV	0.01	
C122	ECUV1E103KBV	0.01	
C123	ECUV1C104ZFV	0.1	
C124	ECUV1C104ZFV	0.1	
C125	ECUV1E103KBV	0.01	
C126	ECUV1E103KBV	0.01	
C128	ECUV1C104ZFV	0.1	
C129	ECUV1C104ZFV	0.1	
C130	F1J0J1060006	10	
C131	ECUV1H101JCV	100p	
C132	ECUV1C104ZFV	0.1	

Ref. No.	Part No.	Part Name & Description	Remarks
C133	ECUV1C104ZFV	0.1	
C134	ECUV1C104ZFV	0.1	
C135	ECUV1C104ZFV	0.1	
C136	ECUV1C104ZFV	0.1	
C137	ECUV1E103KBV	0.01	
C138	ECUV1E103KBV	0.01	
C139	ECUV1C104ZFV	0.1	
C140	ECUV1C104ZFV	0.1	
C141	ECUV1E103KBV	0.01	
C142	ECUV1E103KBV	0.01	
C143	ECUV1C104ZFV	0.1	
C144	ECUV1C104ZFV	0.1	
C145	ECUV1E103KBV	0.01	
C146	ECUV1E103KBV	0.01	
C147	ECUV1C104ZFV	0.1	
C148	ECUV1C104ZFV	0.1	
C149	ECUV1C104ZFV	0.1	
C150	ECUV1C104ZFV	0.1	
C151	ECUV1E103KBV	0.01	
C152	ECUV1E103KBV	0.01	
C153	ECUV1C104ZFV	0.1	
C154	ECUV1C104ZFV	0.1	
C155	ECUV1E103KBV	0.01	
C156	ECUV1E103KBV	0.01	
C157	ECUV1C104ZFV	0.1	
C158	ECUV1C104ZFV	0.1	
C159	F1J0J1060006	10	
C160	F1J0J1060006	10	
C161	ECUV1H220JCV	22p	
C164	ECUV1C104ZFV	0.1	
C165	ECUV1E103KBV	0.01	
C166	ECUV1C104ZFV	0.1	
C167	ECUV1E103KBV	0.01	
C168	ECUV1C104ZFV	0.1	
C169	ECUV1E103KBV	0.01	
C170	ECUV1C104ZFV	0.1	
C171	ECUV1C104ZFV	0.1	
C172	ECUV1C104ZFV	0.1	
C190	ECUV1C104ZFV	0.1	
C192	ECUV1E103KBV	0.01	
C201	ECUV1C104ZFV	0.1	
C202	ECUV1C104ZFV	0.1	
C203	ECUV1H120JCV	12p	
C204	ECUV1H120JCV	12p	
C206	ECUV1C104ZFV	0.1	
C207	ECUV1E103KBV	0.01	
C208	F1J0J1060006	10	
C213	ECJ1VC1H040C	4p	
C214	ECUV1C104ZFV	0.1	
C215	ECUV1C104ZFV	0.1	
C224	ECUV1C104ZFV	0.1	
C225	ECUV1C104ZFV	0.1	
C226	ECUV1C104ZFV	0.1	
C227	ECUV1C104ZFV	0.1	
C307	ECUV1C104ZFV	0.1	
C320	ECUV1C104ZFV	0.1	
C401	F2B1E1020001	1000	

Ref. No.	Part No.	Part Name & Description	Remarks
C402	PFCX1EY106ZF	10	S
C403	PFCX1EY106ZF	10	S
C404	ECUV1E104ZFV	0.1	
C405	ECUV1E104ZFV	0.1	
C406	PFCX1EY106ZF	10	S
C407	PFCX1EY106ZF	10	S
C408	ECUV1C104ZFV	0.1	
C411	ECUV1E103KBV	0.01	
C412	ECUV1E103KBV	0.01	
C413	F4Z0J4760001	47	
C414	F4Z0J4760001	47	
C415	ECUV1C104ZFV	0.1	
C416	ECUV1C104ZFV	0.1	
C417	F1J0J1060006	10	
C418	F1J0J1060006	10	
C420	ECUV1A105ZFV	1	
C422	ECUV1C104ZFV	0.1	
C424	ECUV1C104ZFV	0.1	
C426	F1J0J1060006	10	
C444	ECUV1A105ZFV	1	
C501	ECUV1C104ZFV	0.1	
C502	F1J0J1060006	10	
C503	ECUV1C104ZFV	0.1	
C504	ECUV1C104ZFV	0.1	
C506	ECUV1H221JCV	220p	
C510	ECUV1H221JCV	220p	
C516	ECUV1H221JCV	220p	
C522	ECUV1H221JCV	220p	
C540	ECUV1H102KBV	0.001	
C543	ECUV1C104ZFV	0.1	
C544	ECUV1C104ZFV	0.1	
C545	ECUV1C104ZFV	0.1	
C546	ECUV1C104ZFV	0.1	
		(CONNECTORS)	
CN201	K1MN04B00042	CONNECTOR,4P	
CN501	K1MN33B00016	CONNECTOR,33P	
CN502	K1MN27B00030	CONNECTOR,27P	
		(COILS AND CERAMIC FILTER)	
L101	G1C100K00031	COIL	
L201	J0JBC0000071	CERAMIC FILTER	
L202	G1CR12J00003	COIL	
L203	J0JBC0000071	CERAMIC FILTER	
L401	G1C220ZA0011	COIL	
L402	G1C220ZA0011	COIL	
L403	G1C100M00027	COIL	
L404	G1C100M00027	COIL	
L407	G1C100K00031	COIL	
L501	G1C100K00031	COIL	
L502	PQLQR1RS241	COIL	S
		(RESISITORS)	
R107	ERJ3GEYJ103	10k	
R109	ERJ3GEYJ103	10k	
R110	ERJ3GEYJ103	10k	
R111	ERJ3GEYJ103	10k	

[redacted]			

Ref. No.	Part No.	Part Name & Description	Remarks
R114	ERJ3GEYJ103	10k	
R116	ERJ3GEYJ103	10k	
R117	ERJ3GEYJ103	10k	
R118	ERJ3GEYJ103	10k	
R120	ERJ3GEYJ101	100	
R121	ERJ3GEYJ105	1M	
R122	ERJ3GEYJ103	10k	
R123	ERJ3GEYJ103	10k	
R124	ERJ3GEYJ101	100	
R125	ERJ3GEY0R00	0	
R126	ERJ3GEYJ271	270	
R130	ERJ3GEYJ330	33	
R133	ERJ3GEYJ473	47k	
R134	ERJ3GEYJ473	47k	
R135	ERJ3GEYJ473	47k	
R138	ERJ3GEY0R00	0	
R139	ERJ3GEYJ103	10k	
R140	ERJ3GEYJ473	47k	
R201	ERJ3GEYJ103	10k	
R202	ERJ3GEYJ102	1k	
R203	ERJ3GEYJ103	10k	
R204	ERJ3EKF1102	11k	
R205	ERJ3EKF2001	2k	
R206	ERJ3GEY0R00	0	
R207	ERJ3GEY0R00	0	
R208	ERJ3GEY0R00	0	
R209	ERJ3GEY0R00	0	
R210	ERJ3EKF1541	154k	
R211	ERJ3GEYJ103	10k	
R212	ERJ3GEYJ103	10k	
R213	ERJ3GEYJ103	10k	
R214	ERJ3GEYJ103	10k	
R215	ERJ3EKF51R1	51.1	
R216	ERJ3EKF51R1	51.1	
R217	ERJ3EKF61R9	61.9	
R218	ERJ3EKF61R9	61.9	
R219	ERJ3GEYJ470	47	
R220	ERJ3GEYJ470	47	
R221	ERJ3GEYJ470	47	
R223	ERJ3GEYJ470	47	
R225	ERJ3GEYJ470	47	
R226	ERJ3GEYJ470	47	
R227	ERJ3GEY0R00	0	
R228	ERJ3GEY0R00	0	
R229	ERJ3GEY0R00	0	
R230	ERJ3GEY0R00	0	
R310	ERJ3GEYJ103	10k	
R311	ERJ3GEYJ103	10k	
R316	ERJ3GEYJ103	10k	
R318	ERJ3GEYJ103	10k	
R319	ERJ3GEYJ103	10k	
R320	ERJ3GEYJ104	100k	
R321	ERJ3GEYJ104	100k	
R322	ERJ3GEYJ472	4.7k	
R323	ERJ3GEYJ103	10k	
R325	ERJ3GEYJ472	4.7k	
R326	ERJ3GEYJ104	100k	

[redacted]			

Ref. No.	Part No.	Part Name & Description	Remarks
R328	ERJ3GEYJ104	100k	
R329	ERJ3GEYJ103	10k	
R330	ERJ3GEYJ103	10k	
R331	ERJ3GEYJ101	100	
R401	ERJ3GEYJ152	1.5k	
R402	ERJ3GEYJ100	10	
R403	ERJ3GEYJ100	10	
R404	ERJ3GEYJ470	47	
R405	ERJ3GEYJ470	47	
R406	ERJ3GEY0R00	0	
R407	ERJ3GEY0R00	0	
R408	ERJ3GEYJ332	3.3k	
R409	ERJ3EKF2702	27k	
R410	ERJ3EKF1202	12k	
R411	ERJ3EKF4702	47k	
R412	ERJ3EKF2002	20k	
R413	ERJ3GEYJ272	2.7k	
R414	ERJ3GEYJ272	2.7k	
R416	PQ4R10XJ271	270	S
R501	ERJ3GEYJ470	47	
R502	ERJ3GEYJ470	47	
R503	ERJ3GEYJ470	47	
R504	ERJ3GEYJ470	47	
R505	ERJ3GEYJ470	47	
R506	ERJ3GEYJ470	47	
R507	ERJ3GEYJ470	47	
R508	ERJ3GEYJ470	47	
R509	ERJ3GEYJ470	47	
R510	ERJ3GEYJ470	47	
R511	ERJ3GEY0R00	0	
R512	ERJ3GEY0R00	0	
R513	ERJ3GEY0R00	0	
R514	ERJ3GEY0R00	0	
R515	ERJ3GEY0R00	0	
R516	ERJ3GEYJ470	47	
R518	ERJ3GEYJ101	100	
R520	ERJ3GEYJ561	560	
R521	ERJ3GEYJ561	560	
R522	ERJ3GEYJ470	47	
R523	ERJ3GEYJ470	47	
R525	ERJ3GEYJ470	47	
R526	ERJ3GEYJ470	47	
R529	ERJ3GEYJ103	10k	
R530	ERJ3GEYJ103	10k	
R531	ERJ3GEYJ470	47	
R532	ERJ3GEY0R00	0	
R533	ERJ3GEYJ470	47	
R534	ERJ3GEY0R00	0	
R535	ERJ3GEY0R00	0	
R536	ERJ3GEYJ470	47	
R537	ERJ3GEY0R00	0	
R538	ERJ3GEYJ470	47	
R539	ERJ3GEYJ332	3.3k	
R540	ERJ3GEYJ332	3.3k	
C109	ERJ3GEY0R00	0	
		(COMPONENTS PARTS)	

Ref. No.	Part No.	Part Name & Description	Remarks
RA201	D1H84704A037	RESISTOR ARRAY	
RA202	D1H84704A037	RESISTOR ARRAY	
RA502	PSLQR2C601MT	RESISTOR ARRAY	
RA503	PSLQR2C601MT	RESISTOR ARRAY	
		(SWITCH)	
SW101	EVQPSM02K	SWITCH	
		(CRYSTAL OSCILLATORS)	
X101	H0J163500014	CRYSTAL OSCILLATOR	
X201	H0J250500038	CRYSTAL OSCILLATOR	
		(OHTERS)	
E1	PSHX1245Z	PLASTIC PARTS,SHEET	
E2	PSHX1205Z	PLASTIC PARTS,SHEET	
E3	PSHR1325Z	SPACER	

18.4. I/O BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB2	PSWP2HCM311A	I/O BOARD ASS'Y (RTL)	
		(ICS)	
IC601	C1CB00001622	IC	
IC602	AN6123MS	IC	
IC603	AN6123MS	IC	
		(TRANSISTORS)	
Q601	PQVTDTC143E	TRANSISTOR(SI)	S
Q602	PQVTDTC143E	TRANSISTOR(SI)	S
Q603	B1ABCF000103	TRANSISTOR(SI)	
		(DIODES)	
D601	MA736	DIODE(SI)	S
DA601	MA143A	DIODE(SI)	S
DA602	MA143A	DIODE(SI)	S
DA603	MA143A	DIODE(SI)	S
LED601	B3AKB0000008	LED	
		(CAPACITORS)	
C602	ECUV1C104ZFV	0.1	
C605	ECUV1C104ZFV	0.1	
C606	ECST0JX476	47	S
C607	PQCUV1A105KB	1	S
C608	ECUV1C104ZFV	0.1	
C609	ECST0JX476	47	S
C610	ECUV1E104ZFV	0.1	
C611	F1K3A222A002	0.0022	
C612	ECUV1C473KBV	0.047	
C613	ECUV1C473KBV	0.047	
C614	ECUV0J105KBV	1	S
C615	ECUV1H331JCV	330p	
C617	ECUV1H331JCV	330p	
C618	ECUV1C474KBV	0.47	
C619	ECUV1C474KBV	0.47	

Ref. No.	Part No.	Part Name & Description	Remarks
C620	F1J0J1060006	10	
C621	ECUV1E104ZFV	0.1	
C622	ECUV1C104ZFV	0.1	
C623	F1J0J1060006	10	
C624	F1J0J1060006	10	
C625	ECUV1C104ZFV	0.1	
C626	ECUV1C104ZFV	0.1	
C627	ECUV1H122KBV	0.0012	
C628	ECUV1H122KBV	0.0012	
C629	ECUV0J105KBV	1	S
C630	ECUV1E104ZFV	0.1	
C631	F1J0J1060006	10	
C632	ECUV1A224KBV	0.22	S
C633	ECUV1E104ZFV	0.1	
C634	ECUV0J105KBV	1	S
C635	ECUV0J105KBV	1	S
C636	ECUV0J105KBV	1	S
C637	ECUV0J105KBV	1	S
C638	ECUV0J105KBV	1	S
C639	PQCUV1A105KB	1	S
C640	ECUV1C104ZFV	0.1	
C641	F1J0J1060006	10	
C642	F1J0J1060006	10	
C643	ECUV1C104ZFV	0.1	
		(CONNECTORS AND JACKS)	
CN601	K4BC06B00047	JACK	
CN602	PFJJ1B01Z	JACK	S
CN603	PQJJ1D010Z	JACK	S
CN604	K2HC103B0061	JACK	
CN605	K2LC108B0046	JACK	
CN606	PQJS33A62Z	CONNECTOR,33P	
CN607	K1KA02AA0229	CONNECTOR,2P	
		(FUSE)	
IP601	D4FBR200A003	FUSE	
		(COILS AND CERAMIC FILTER)	
L601	G0B150G00002	COIL	
L602	G1C6R8Z00005	COIL	
L603	J0JCC0000079	CERAMIC FILTER	
L604	J0JCC0000079	CERAMIC FILTER	
L605	J0JCC0000079	CERAMIC FILTER	
L606	G1C100K00031	COIL	
L608	PQLQR1RS241	COIL	S
L609	J0JCC0000079	CERAMIC FILTER	
L610	J0JCC0000079	CERAMIC FILTER	
L611	J0JCC0000079	CERAMIC FILTER	
L612	J0JCC0000079	CERAMIC FILTER	
R641	PQLQR1RS241	COIL	S
R642	J0JCC0000079	CERAMIC FILTER	
R643	J0JCC0000079	CERAMIC FILTER	
R644	J0JCC0000079	CERAMIC FILTER	
		(RESISITORS)	
R601	ERJ3GEYJ750	75	
R602	ERJ3GEYJ750	75	

Ref. No.	Part No.	Part Name & Description	Remarks
R603	ERJ3GEYJ222	2.2k	
R604	ERJ3GEYJ222	2.2k	
R606	ERJ3GEYJ102	1k	
R607	ERJ3GEYJ102	1k	
R608	PQ4R18XJ100	10	S
R609	ERJ3GEY0R00	0	
R610	ERJ3GEYJ103	10k	
R611	ERJ3GEYJ103	10k	
R612	ERJ3GEYJ473	47k	
R613	ERJ3GEYJ203	20k	
R614	ERJ3GEYJ154	150k	
R615	ERJ3GEYJ750	75	
R616	ERJ3GEYJ750	75	
R617	ERJ3GEYJ154	150k	
R618	ERJ3GEYJ680	68	
R619	ERJ3GEYJ820	82	
R621	ERJ3GEYJ332	3.3k	
R622	ERJ3GEYJ332	3.3k	
R623	ERJ3GEYJ105	1M	
R624	ERJ3GEYJ105	1M	
R625	ERJ3GEYJ203	20k	
R626	ERJ3GEYJ203	20k	
R627	ERJ3GEYJ103	10k	
R628	ERJ3GEYJ103	10k	
R629	ERJ3GEYJ104	100k	
R630	ERJ3GEYJ105	1M	
R631	ERJ3GEYJ104	100k	
R632	ERJ3GEYJ104	100k	
R633	ERJ3GEY0R00	0	
R634	ERJ3GEY0R00	0	
R635	ERJ3GEY0R00	0	
R636	ERJ3GEY0R00	0	
R637	ERJ3GEY0R00	0	
R645	ERJ3GEYJ561	560	
		(VARISTORS)	
SA601	D4ZZ00000024	VARISTOR (SAUGE ABSORBER)	
SA602	D4ZZ00000024	VARISTOR (SAUGE ABSORBER)	
SA603	D4ZZ00000024	VARISTOR (SAUGE ABSORBER)	
SA604	D4ZZ00000024	VARISTOR (SAUGE ABSORBER)	
SA605	D4ZZ00000024	VARISTOR (SAUGE ABSORBER)	
SA606	D4ZZ00000024	VARISTOR (SAUGE ABSORBER)	
SA607	D4ZZ00000024	VARISTOR (SAUGE ABSORBER)	
SA608	D4ZZ00000024	VARISTOR (SAUGE ABSORBER)	
		(TRANSFORMER)	
T601	G5B1C0000011	TRANSFORMER	

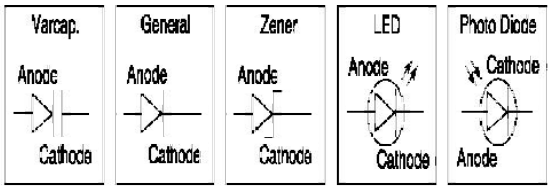
18.5. GREASE

Ref. No.	Part No.	Part Name & Description
	PSZYC10A	GREASE

19. FOR THE SCHEMATIC DIAGRAM

Note:

1. **DC voltage measurements are taken with an oscilloscope or a tester with a ground.**
2. **The schematic diagrams and circuit board may be modified at any time with the development of new technology.**



Important safety notice
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of there components, use only manufacturer's specified parts.

20. SCHEMATIC DIAGRAM

20.1. WAVEFORM

21. CIRCUIT BOARD

21.1. MAIN BOARD (COMPONENT VIEW)

21.2. MAIN BOARD (BOTTOM VIEW)

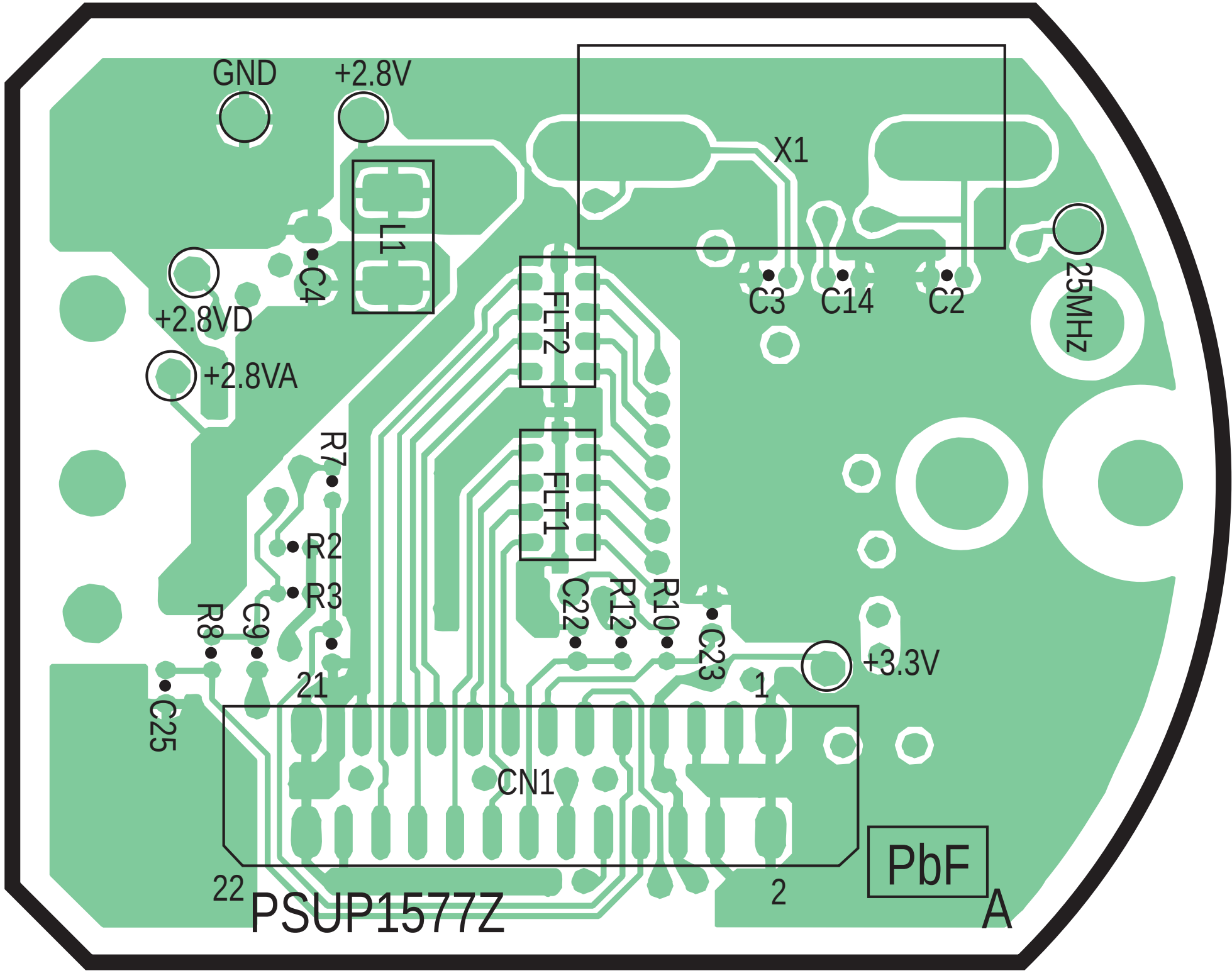
21.3. I/O BOARD (COMPONENT VIEW)

21.4. I/O BOARD (BOTTOM VIEW)

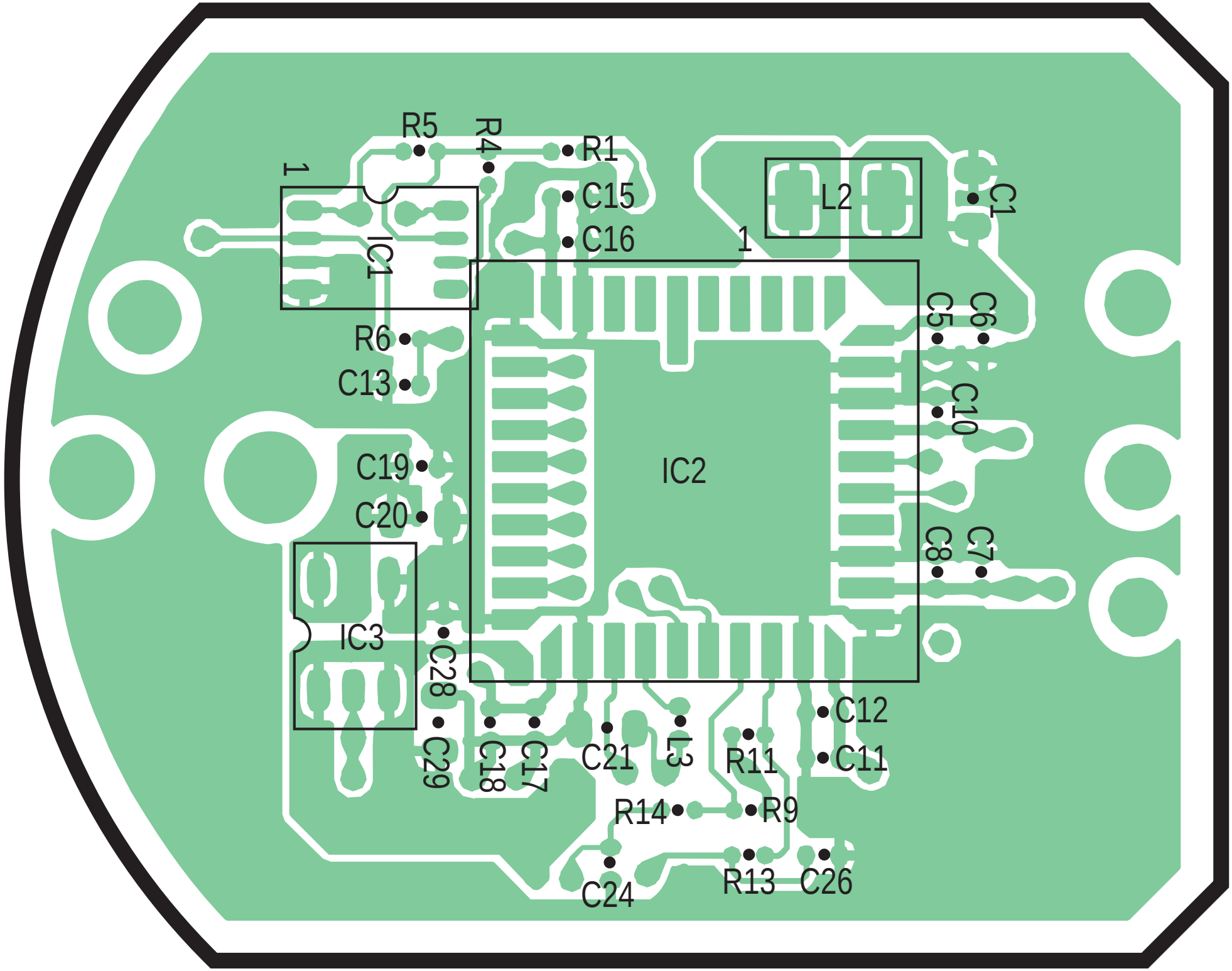
21.5. CAMERA BOARD (COMPONENT VIEW)

21.6. CAMERA BOARD (BOTTOM VIEW)

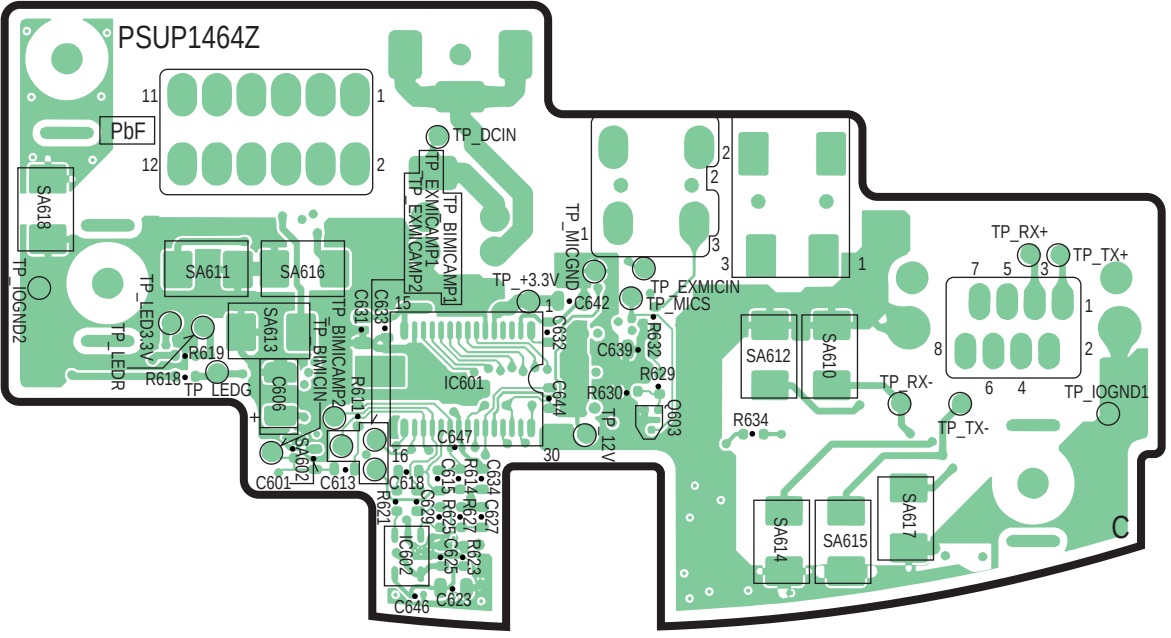
A HCM110A



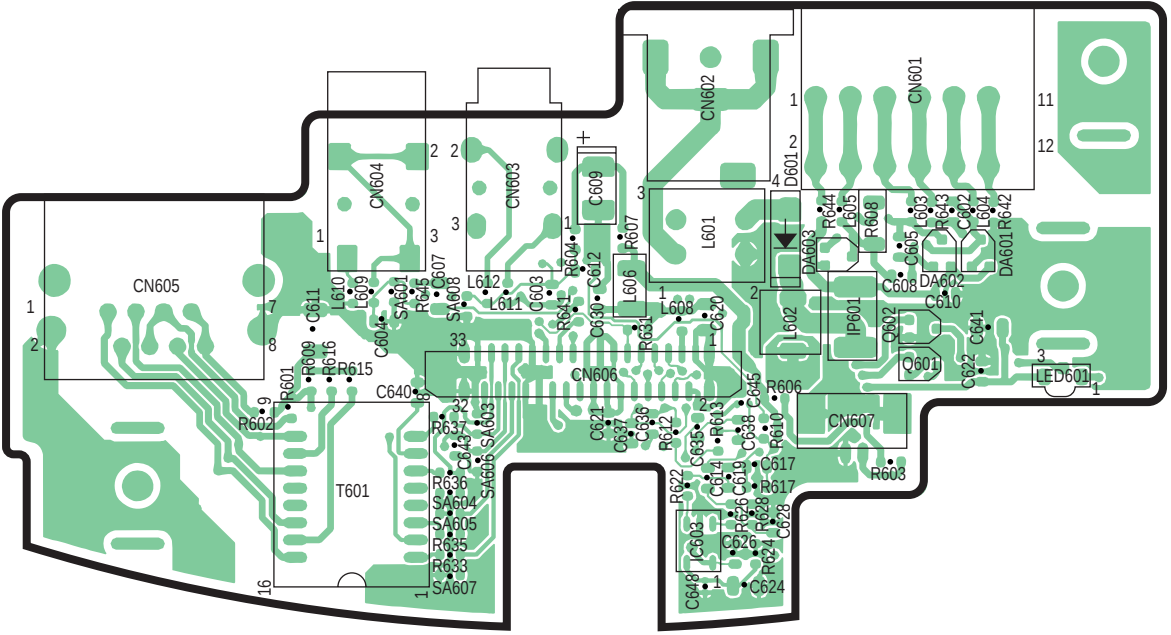
KX-HCM110A CAMERA BOARD



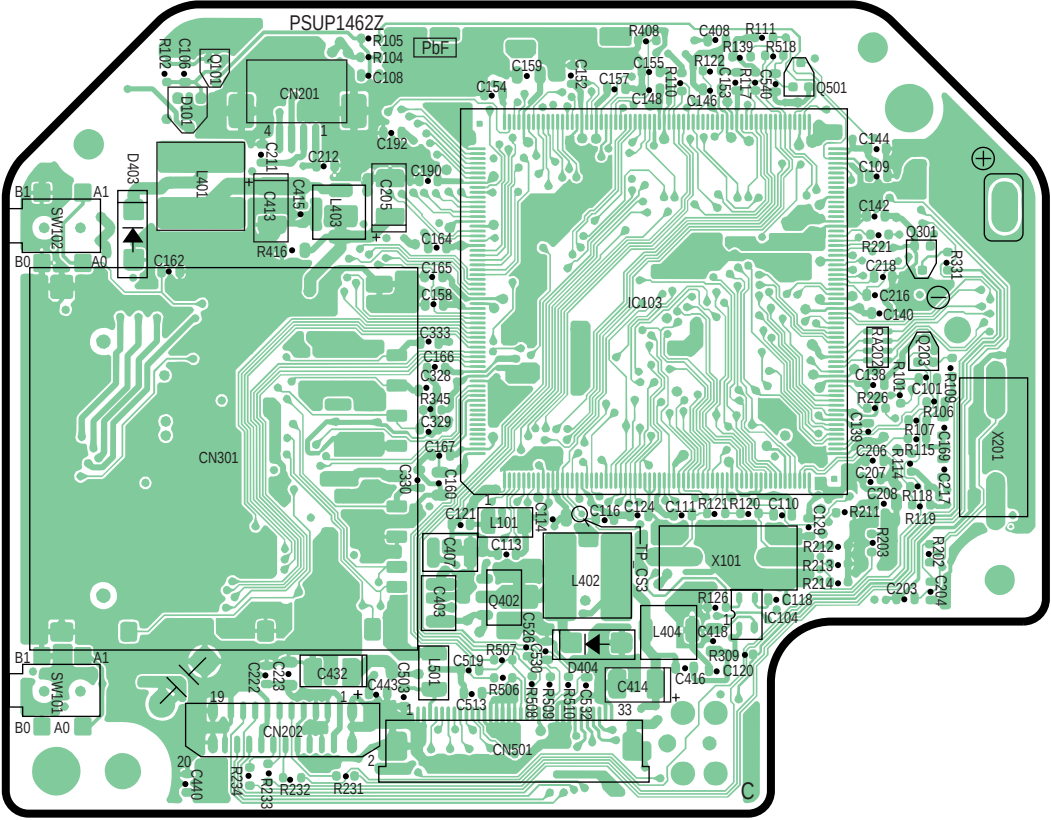
KX-HCM110A CAMERA BOARD



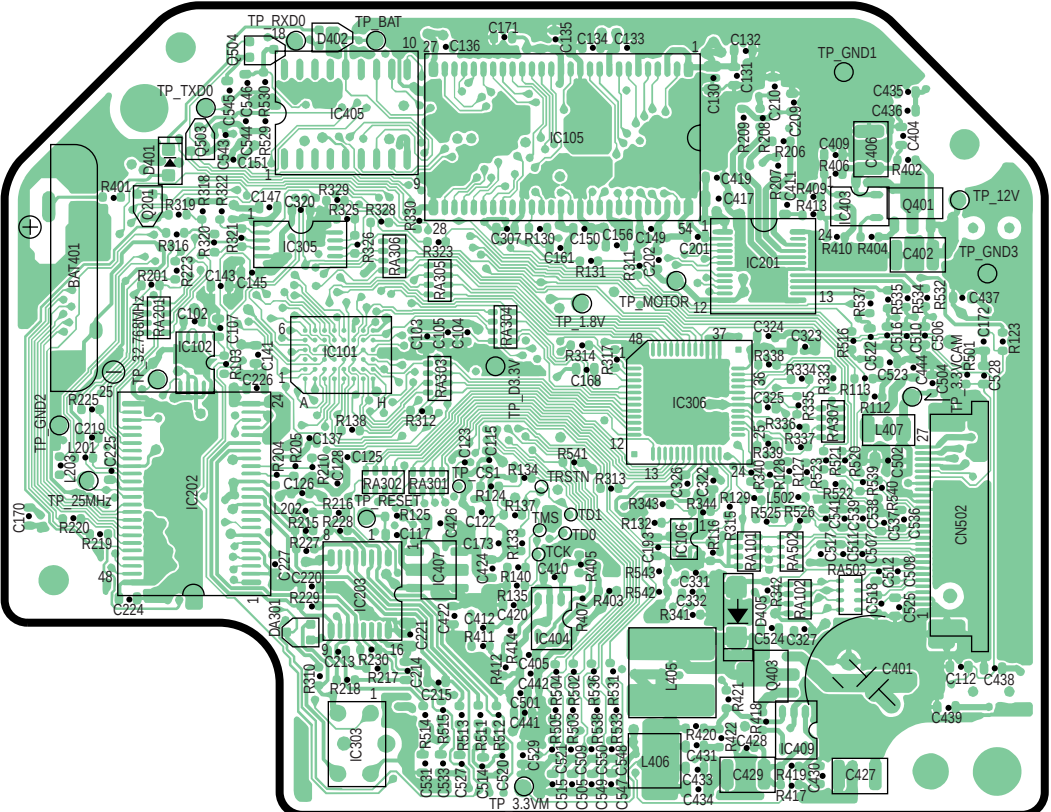
KX-HCM110A I/O BOARD



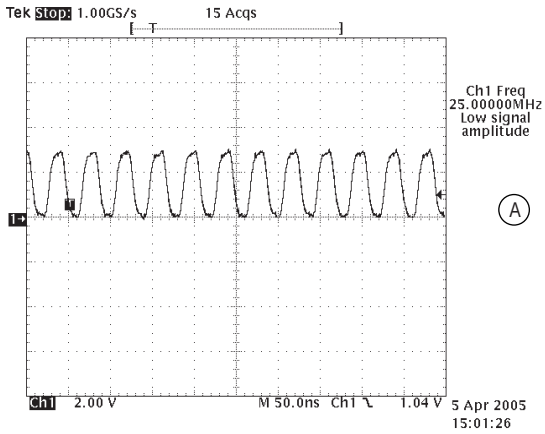
KX-HCM110A I/O BOARD

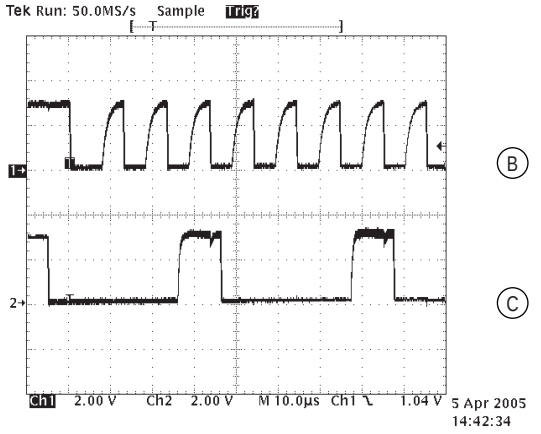


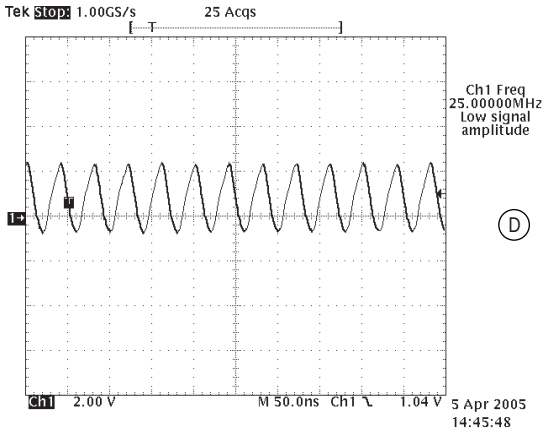
KX-HCM110A MAIN BOARD

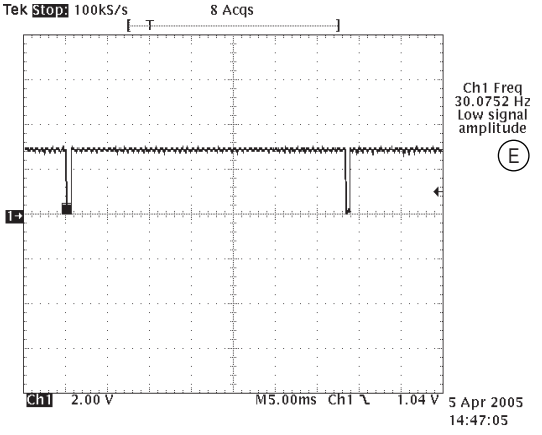


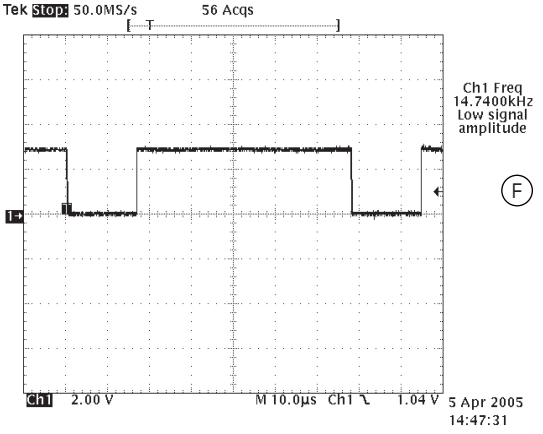
KX-HCM110A MAIN BOARD

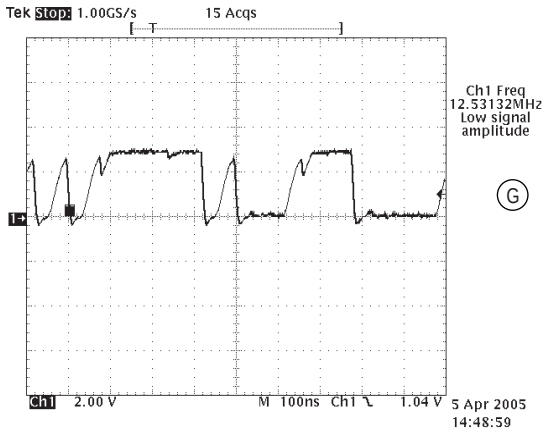

Tek Stop: 1.00GS/s 15 Acqs
Ch1 Freq
25.00000MHz
Low signal
amplitude
A
Ch1 2.00 V M 50.0ns Ch1 1.04 V
5 Apr 2005
15:01:26

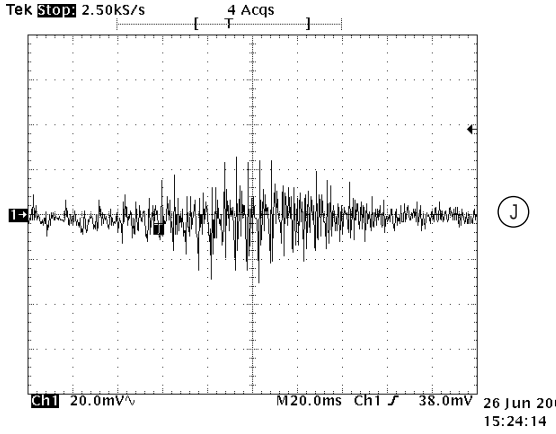

Tek Run: 50.0MS/s Sample Trig
B
C
Ch1 2.00 V Ch2 2.00 V M 10.0µs Ch1 1.04 V
5 Apr 2005
14:42:34

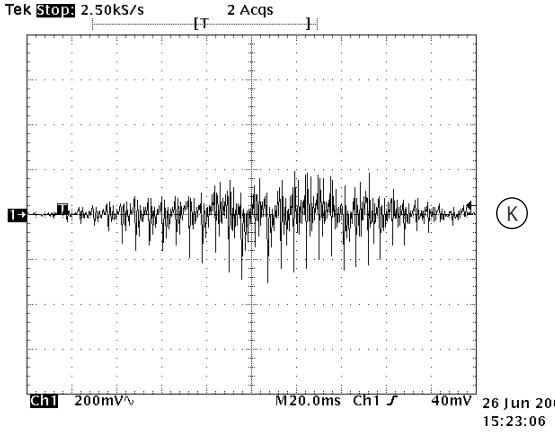

Tek Stop: 1.00GS/s 25 Acqs
Ch1 Freq
25.00000MHz
Low signal
amplitude
D
Ch1 2.00 V M 50.0ns Ch1 1.04 V
5 Apr 2005
14:45:48


Tek Stop: 100kS/s 8 Acqs
Ch1 Freq
30.0752 Hz
Low signal
amplitude
E
Ch1 2.00 V M5.00ms Ch1 1.04 V
5 Apr 2005
14:47:05


Tek Stop: 50.0MS/s 56 Acqs
Ch1 Freq
14.7400kHz
Low signal
amplitude
F
Ch1 2.00 V M 10.0µs Ch1 1.04 V
5 Apr 2005
14:47:31


Tek Stop: 1.00GS/s 15 Acqs
Ch1 Freq
12.53132MHz
Low signal
amplitude
G
Ch1 2.00 V M 100ns Ch1 1.04 V
5 Apr 2005
14:48:59


Tek Stop: 2.50kS/s 4 Acqs
J
Ch1 20.0mV M20.0ms Ch1 38.0mV
26 Jun 2004
15:24:14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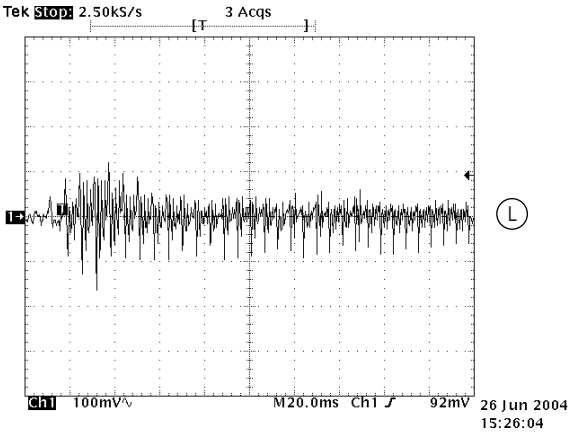
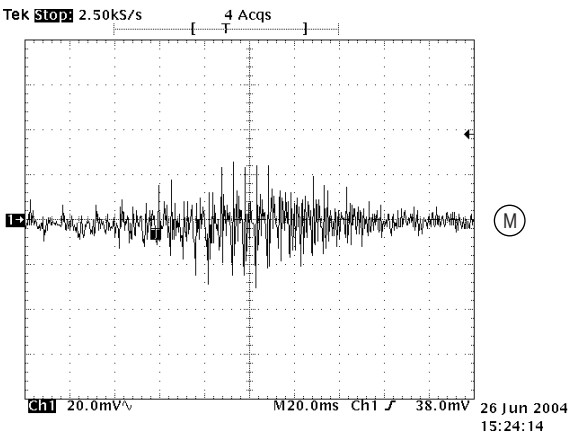
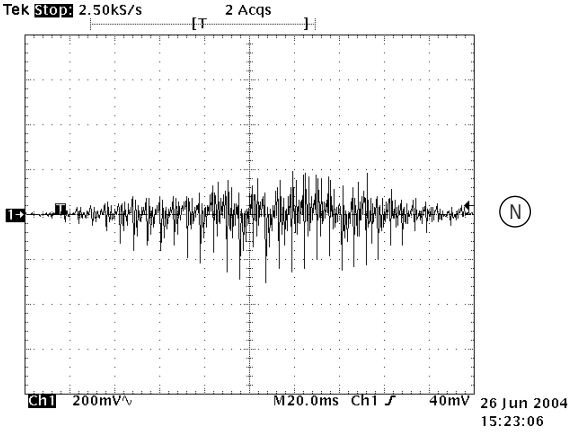
K
Ch1 200mV M20.0ms Ch1 40mV
26 Jun 2004
15:23:06


Tek Stop: 2.50kS/s 3 Acqs
Ch1 100mV M20.0ms Ch1 92mV
26 Jun 2004
15:26:04

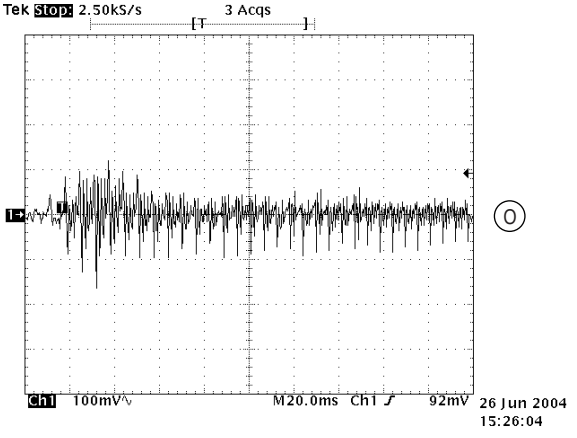
L


Tek Stop: 2.50kS/s 4 Acqs
Ch1 20.0mV M20.0ms Ch1 38.0mV
26 Jun 2004
15:24:14

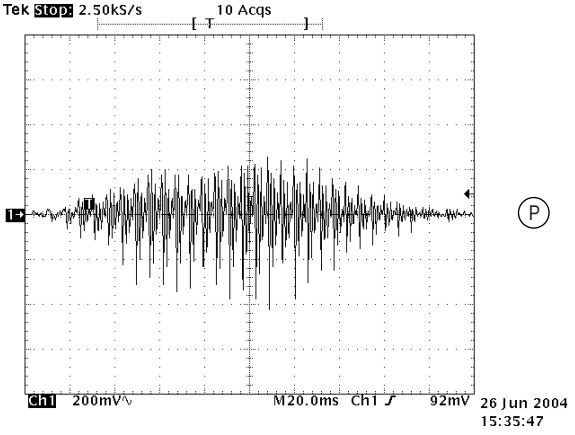
M


Tek Stop: 2.50kS/s 2 Acqs
Ch1 200mV M20.0ms Ch1 40mV
26 Jun 2004
15:23:06

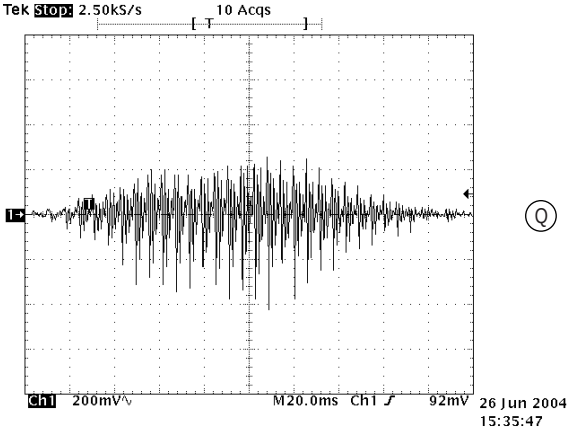
N


Tek Stop: 2.50kS/s 3 Acqs
Ch1 100mV M20.0ms Ch1 92mV
26 Jun 2004
15:26:04

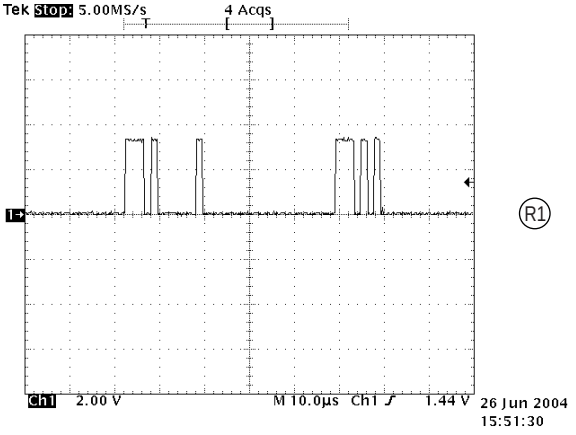
O


Tek Stop: 2.50kS/s 10 Acqs
Ch1 200mV M20.0ms Ch1 92mV
26 Jun 2004
15:35:47

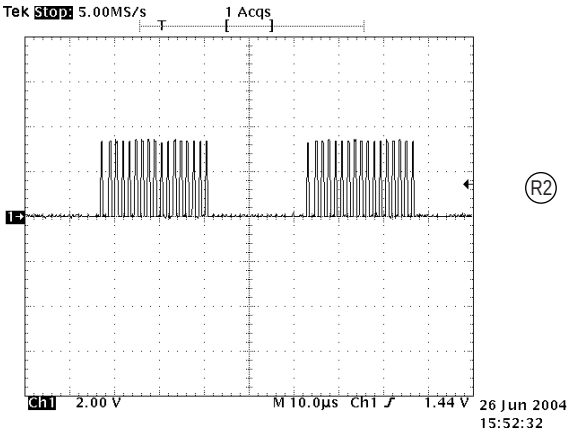
P


Tek Stop: 2.50kS/s 10 Acqs
Ch1 200mV M20.0ms Ch1 92mV
26 Jun 2004
15:35:47

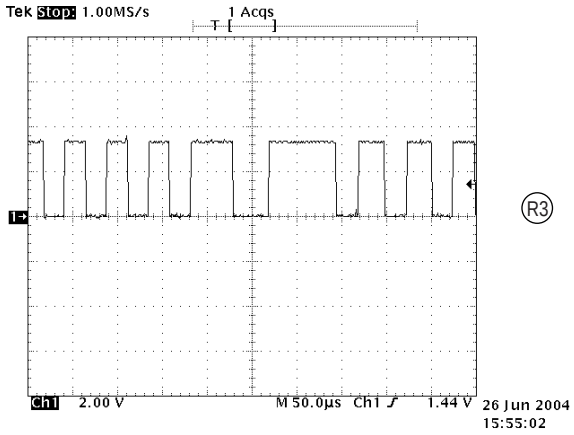
Q


Tek Stop: 5.00MS/s 4 Acqs
Ch1 2.00 V M 10.0µs Ch1 1.44 V
26 Jun 2004
15:51:30

R1


Tek Stop: 5.00MS/s 1 Acqs
Ch1 2.00 V M 10.0µs Ch1 1.44 V
26 Jun 2004
15:52:32

R2



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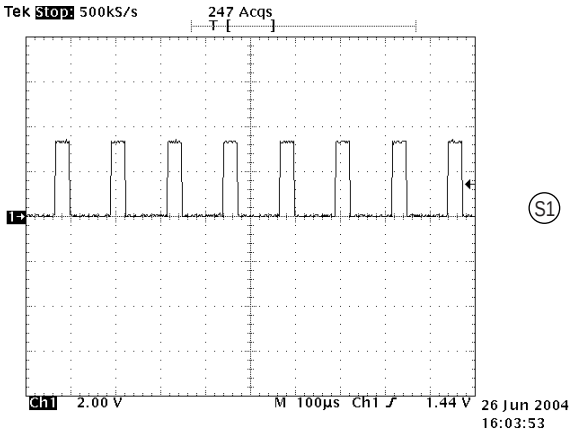

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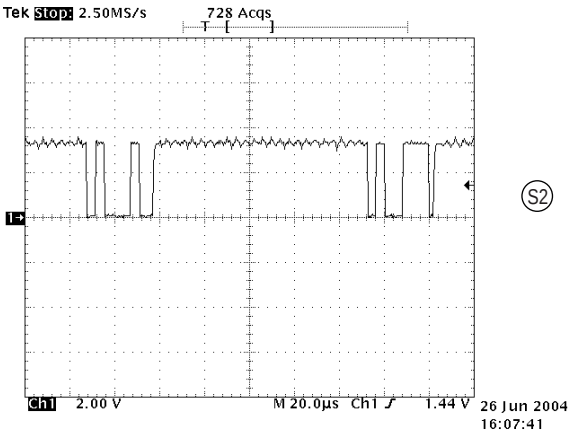
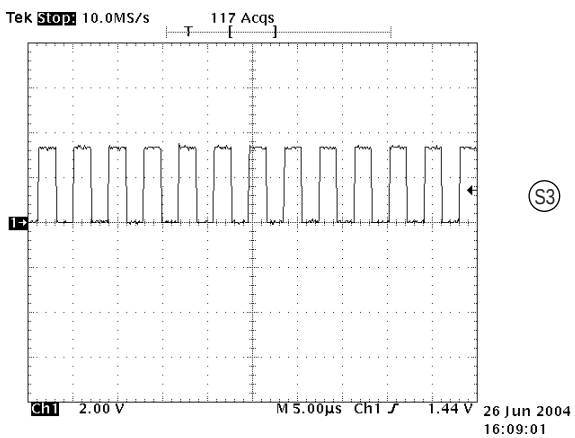
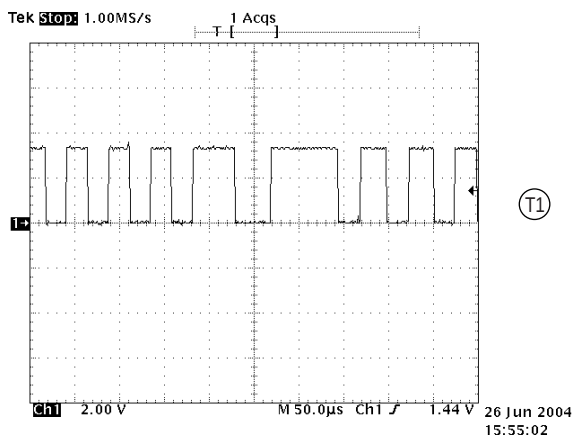


S2



S3



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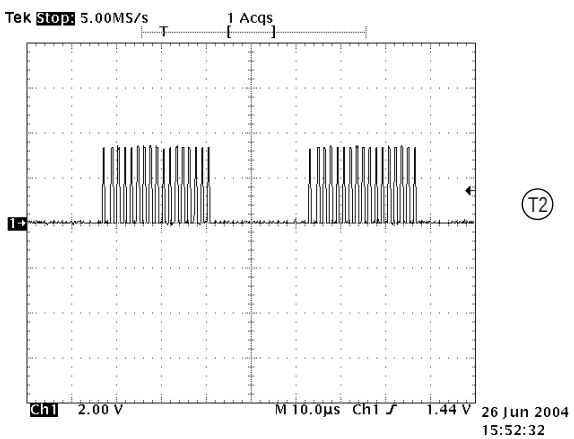

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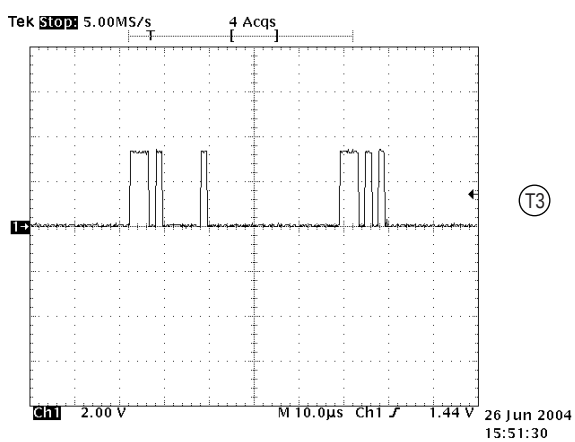

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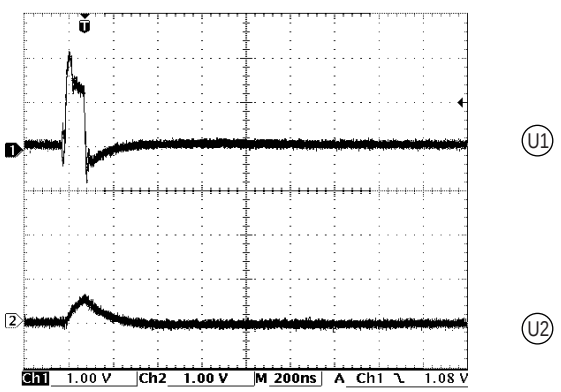
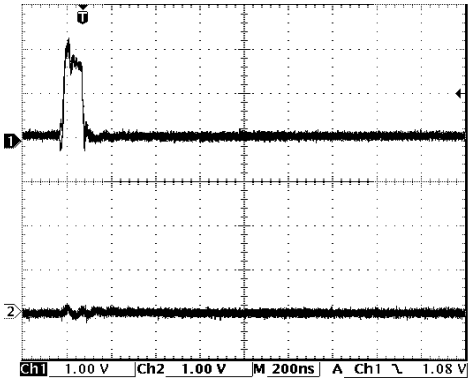


U1

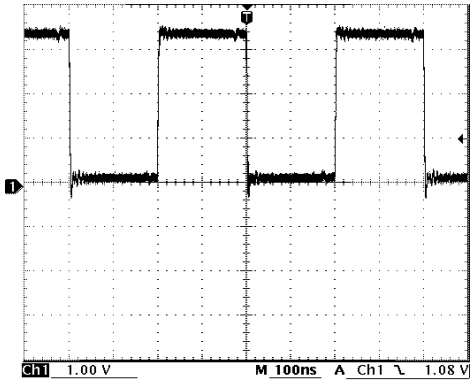
U2

10Base Hub Connection (un-communicating)



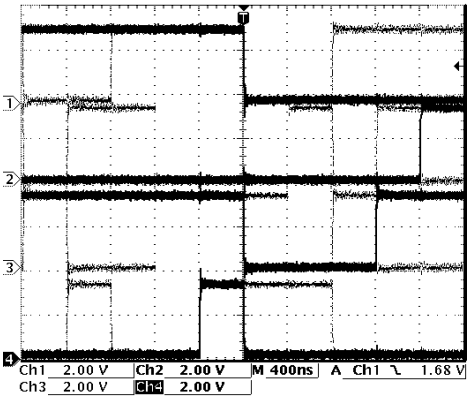
U3

U4



U5

10Base Hub Connection (un-communicating)

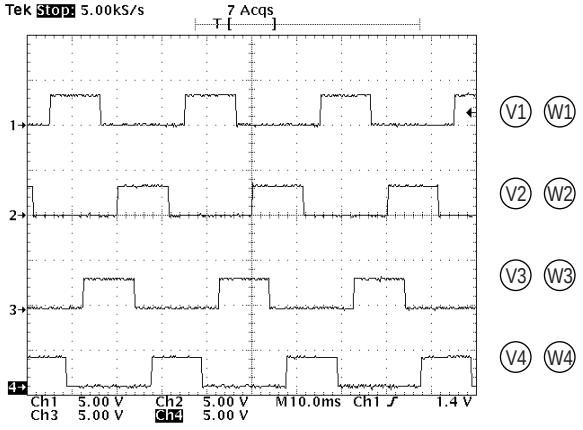


U6

U7

U8

U9



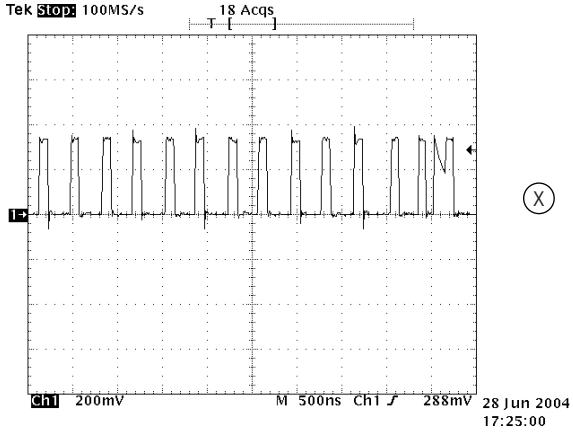
V1 W1

V2 W2

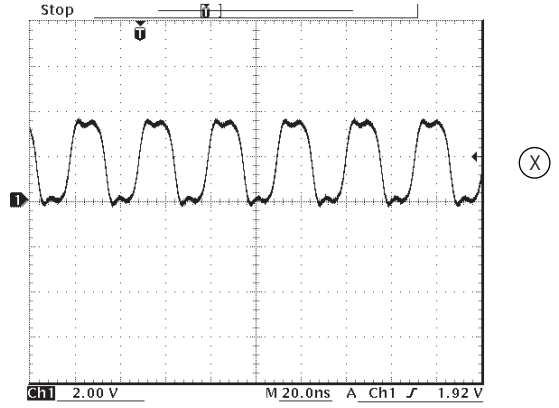
V3 W3

V4 W4

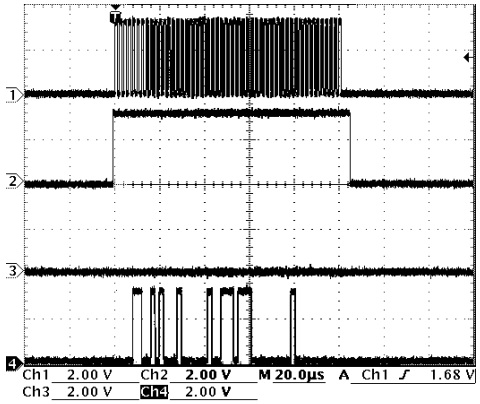
10Base Hub Connection (Communicating)



X



X

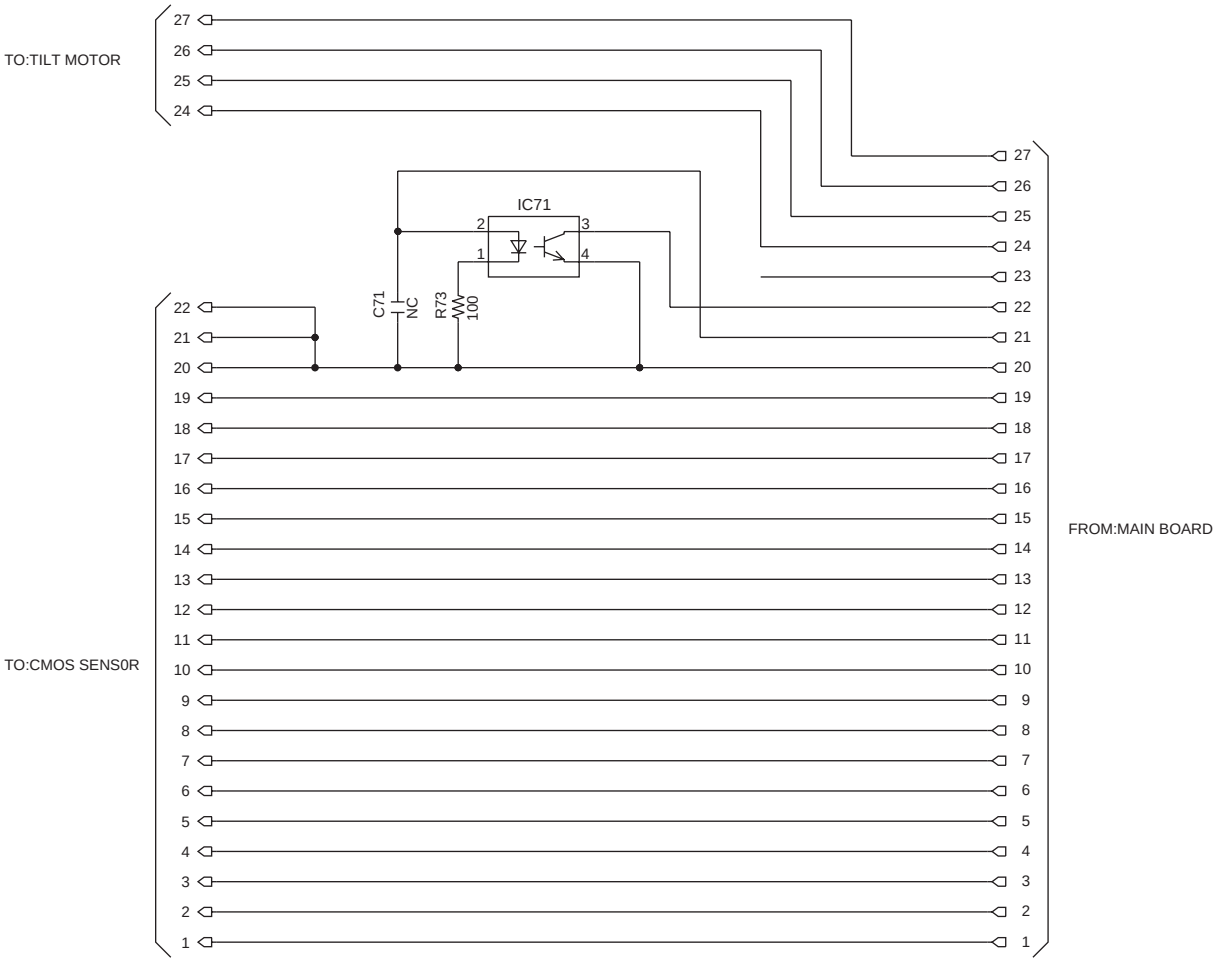


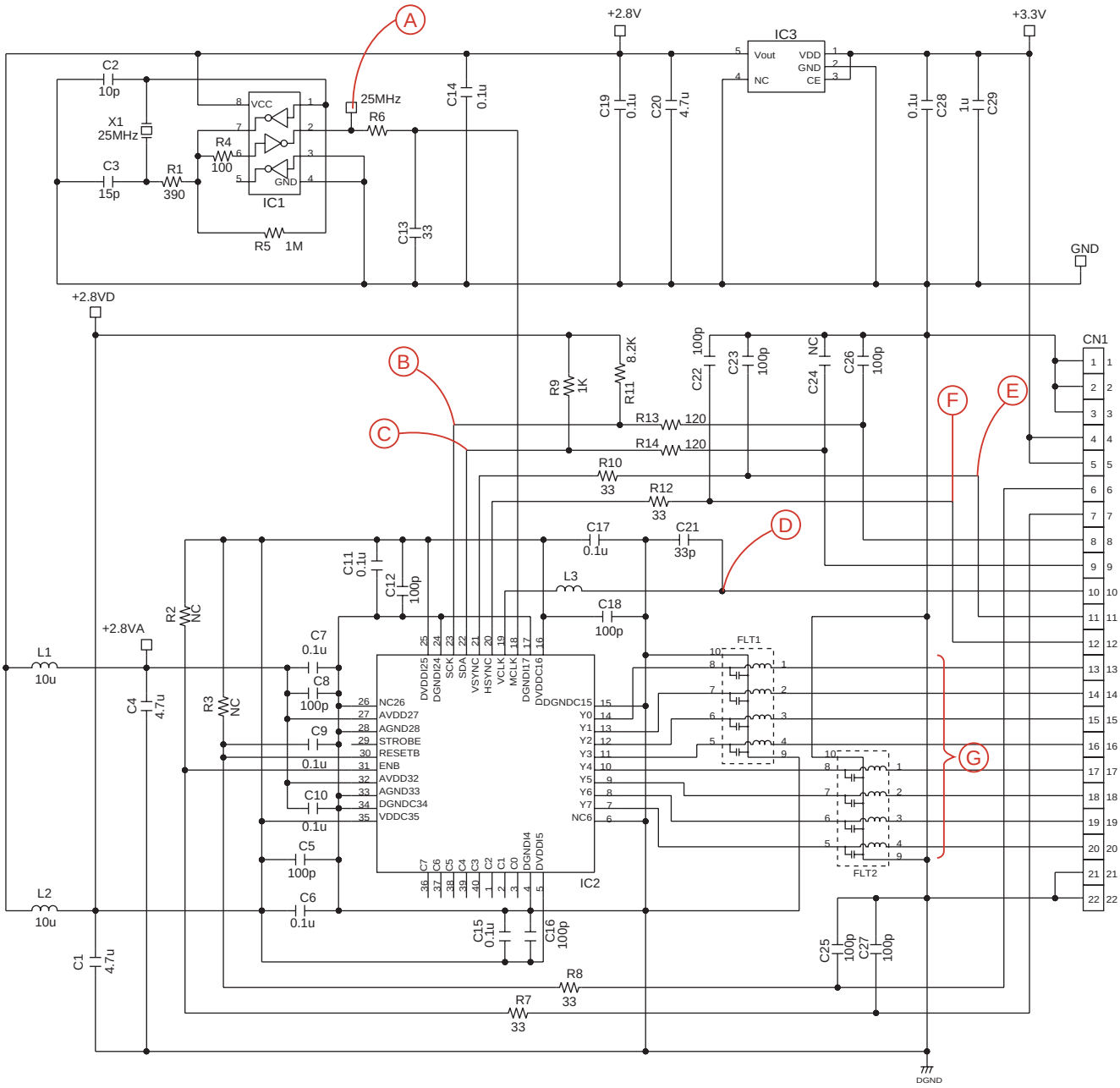
Z2

Z3

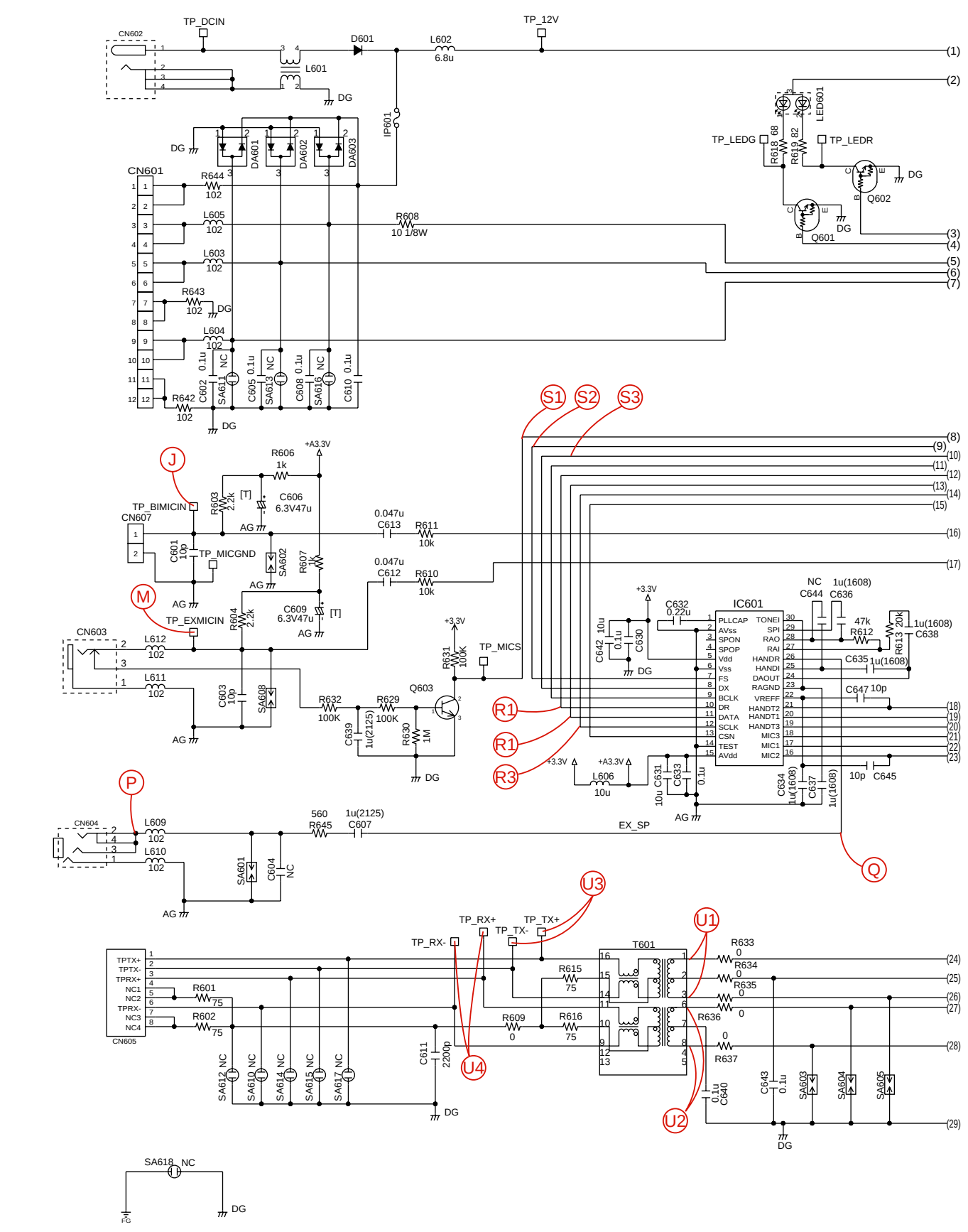
Z4

Z5

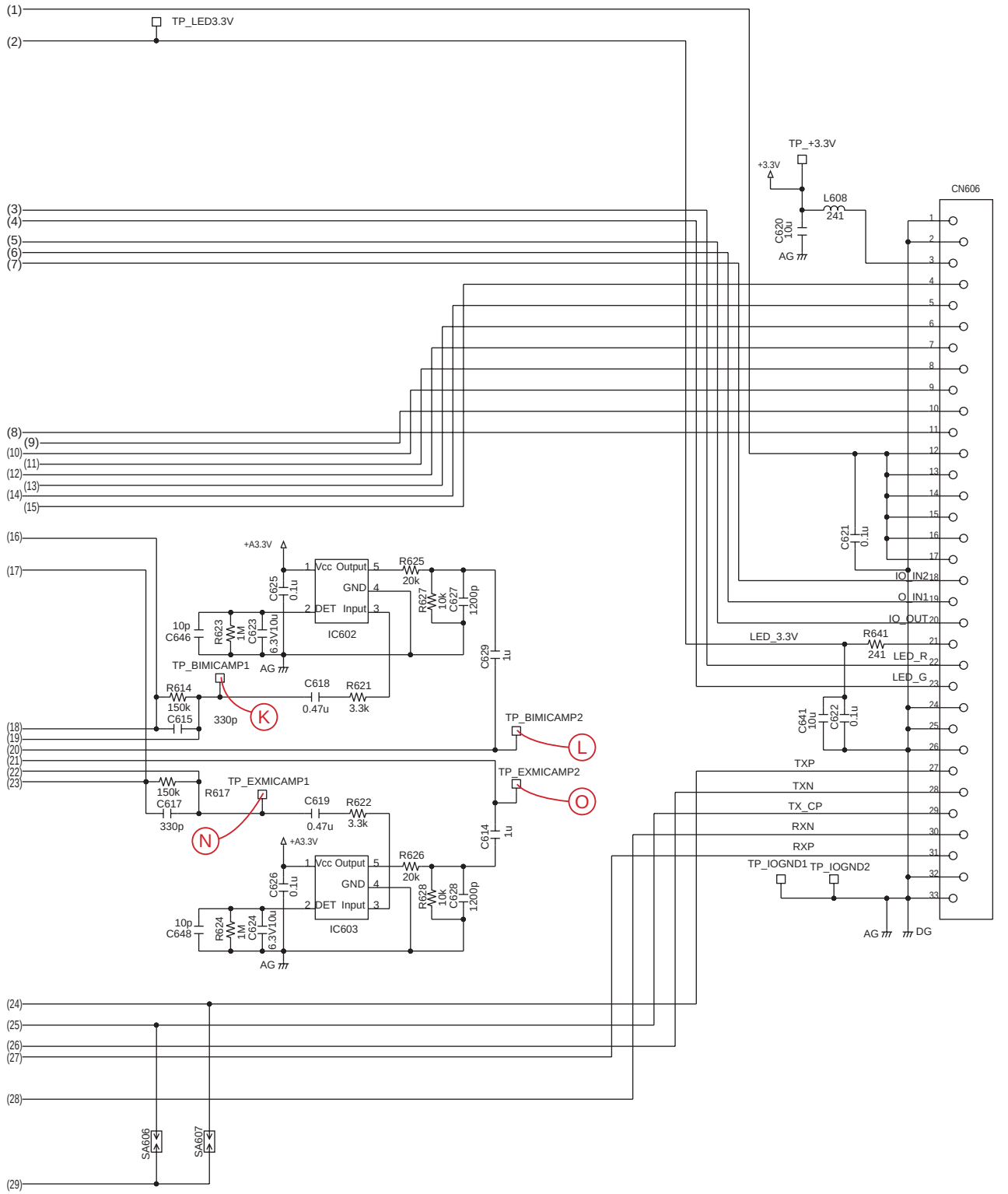

TO:TILT MOTOR
27
26
25
24
IC71
2
3
1
4
C71
NC
R73
W
100
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
FROM:MAIN BOARD
TO:CMOS SENS0R

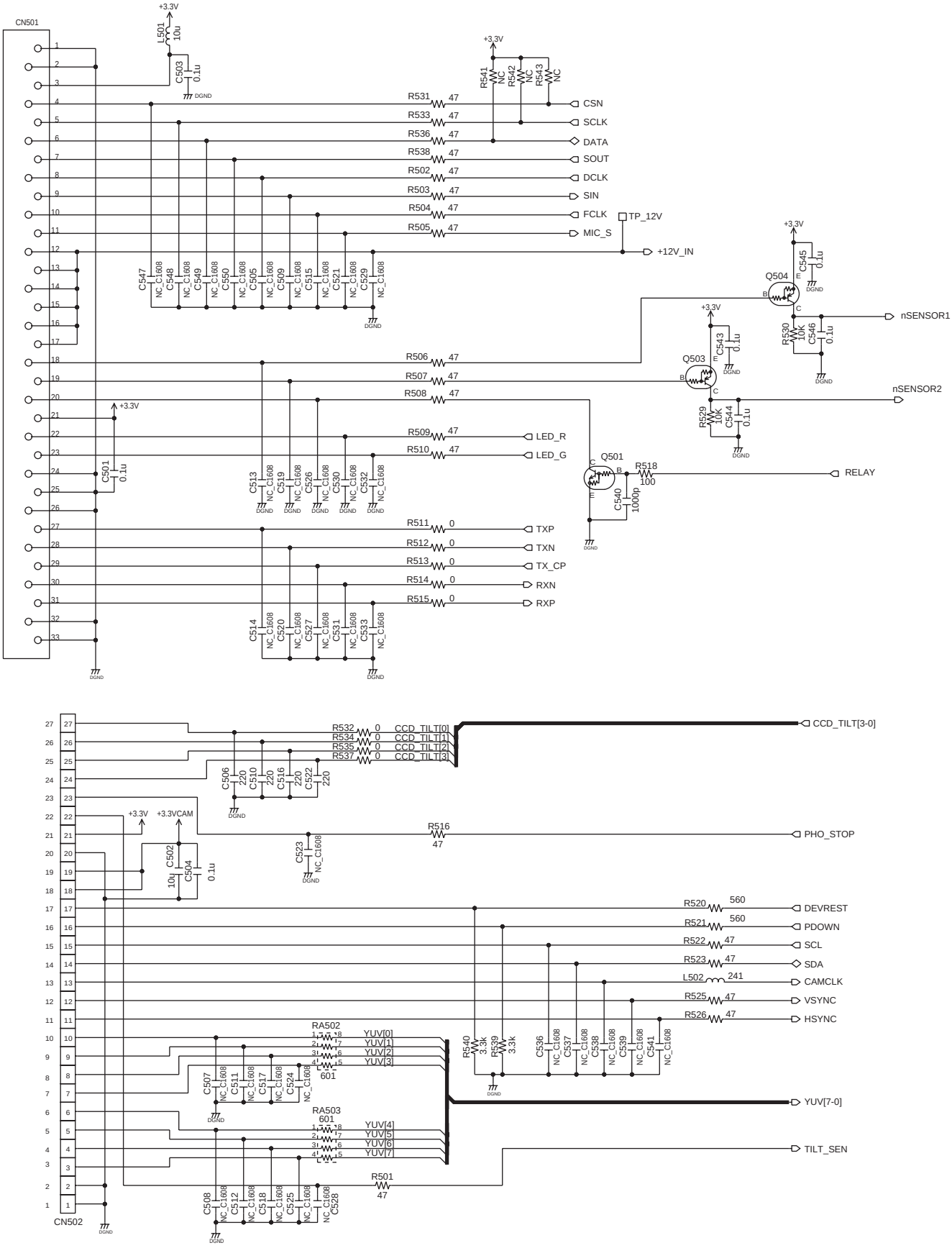


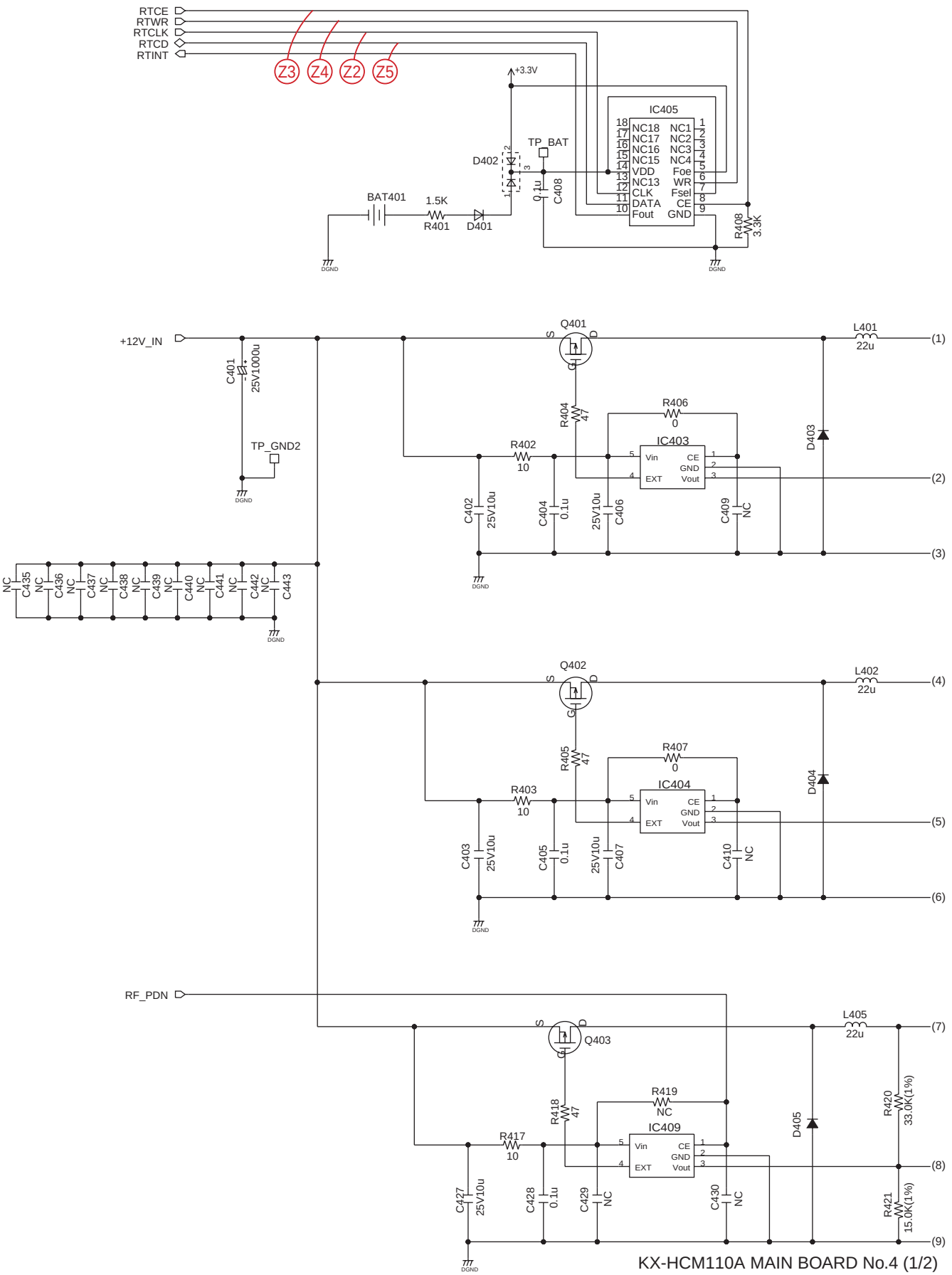
KX-HCM110A CAMERA BOARD



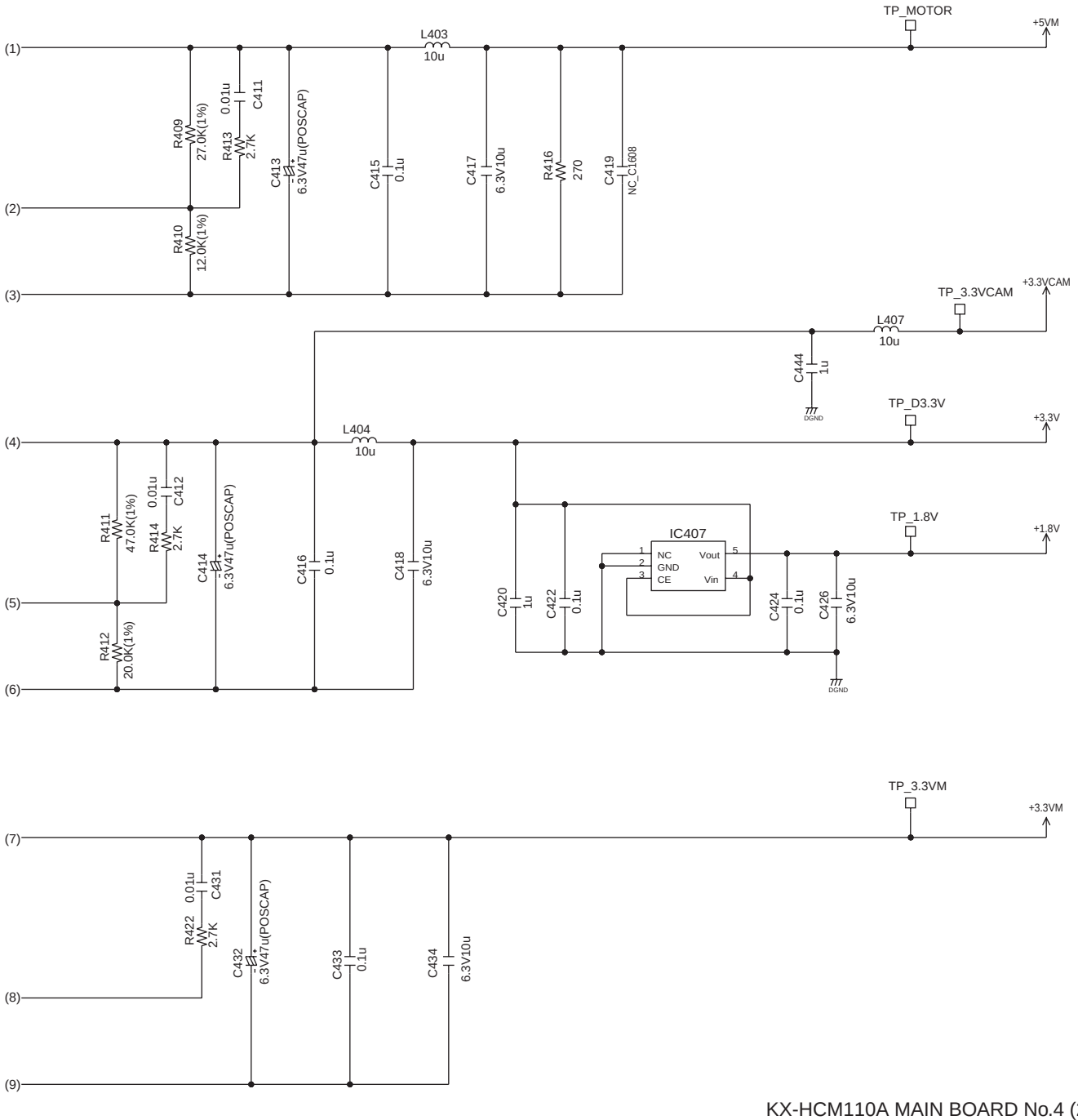
BB-HCM110A I/O BOARD (1/2)

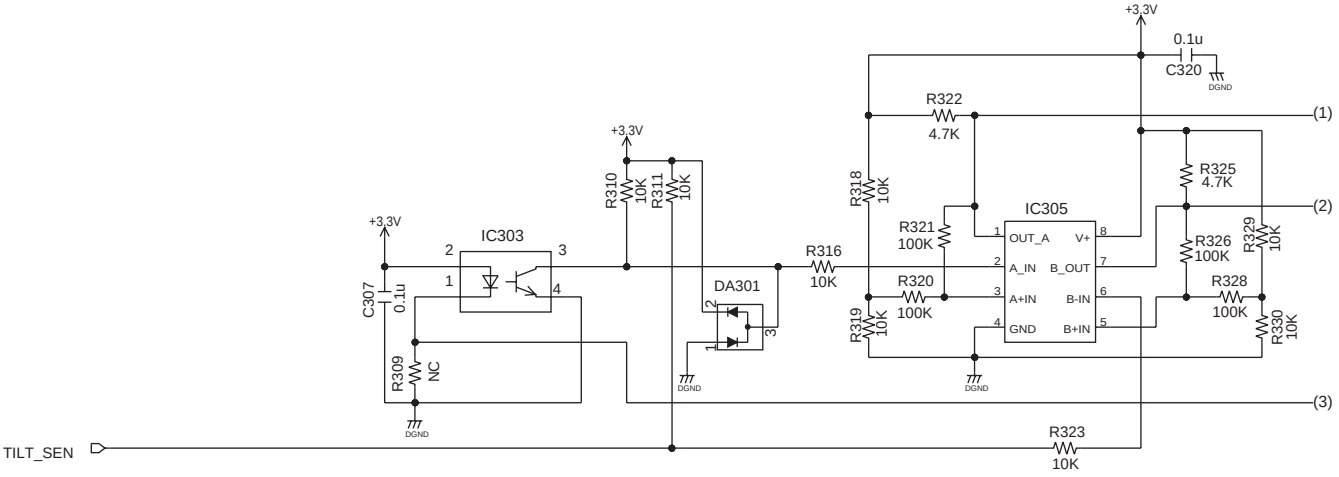

TP_LED3.3V
TP_+3.3V
+3.3V
L608
241
C620
10u
AG
CN606
C621
0.1u
IO_IN2
O_IN1
IO_OUT
LED_3.3V
R641
241
LED_R
LED_G
C641
10u
C622
0.1u
TXP
TXN
TX_CP
RXN
RXP
TP_IOGND1
TP_IOGND2
AG
DG
+A3.3V
IC602
Vcc
Output
GND
DET
Input
C625
0.1u
R625
20k
R627
10k
C627
1200p
C629
1u
10p
C646
R623
1M
C623
6.3V10u
TP_BIMICAMP1
R614
150k
C615
330p
C618
0.47u
R621
3.3k
TP_BIMICAMP2
K
L
TP_EXMICAMP1
R617
150k
C617
330p
C619
0.47u
R622
3.3k
TP_EXMICAMP2
N
O
C614
1u
IC603
C626
0.1u
R626
20k
R628
10k
C628
1200p
10p
C648
R624
1M
C624
6.3V10u
SA606
SA607

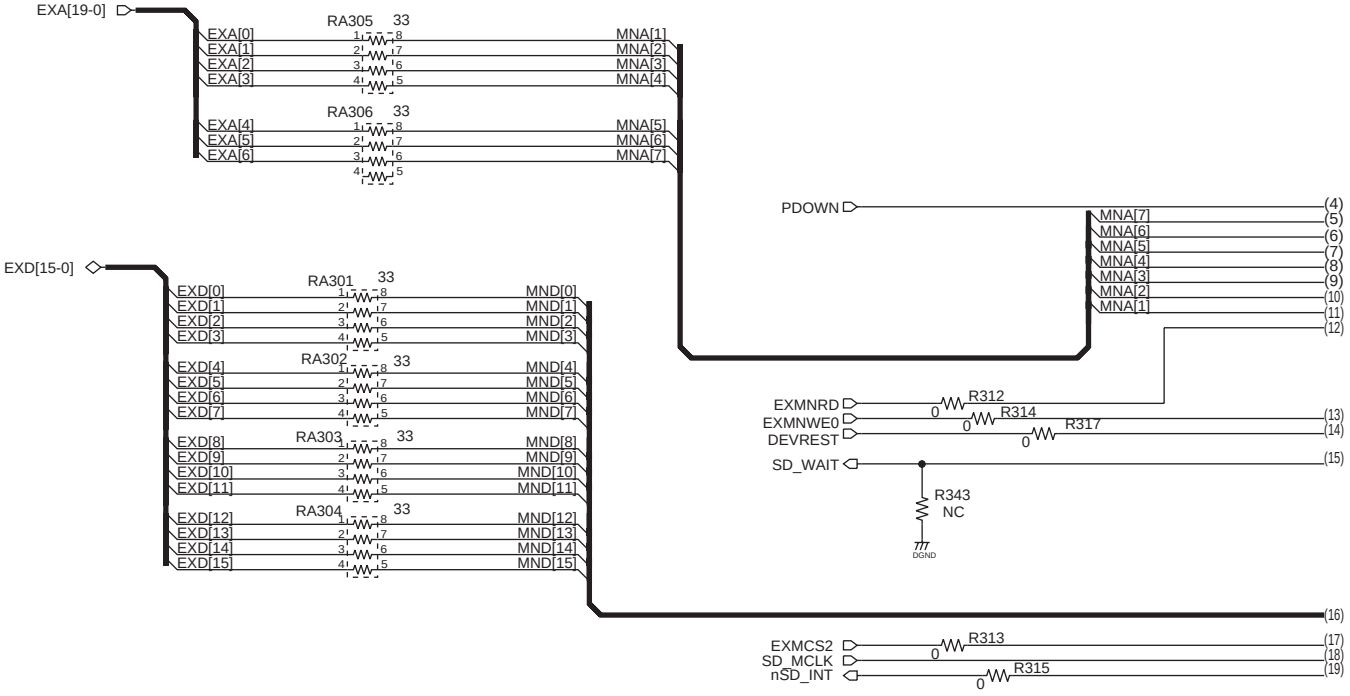

CN501
CN502
+3.3V
+3.3VCAM
DGND
L501 10u
C503 0.1u
R531 47
R533 47
R536 47
R538 47
R502 47
R503 47
R504 47
R505 47
CSN
SCLK
DATA
SOUT
DCLK
SIN
FCLK
MIC_S
TP_12V
+12V_IN
R541 NC
R542 NC
R543 NC
C547 NC_C1608
C548 NC_C1608
C549 NC_C1608
C550 NC_C1608
C505 NC_C1608
C509 NC_C1608
C515 NC_C1608
C521 NC_C1608
C529 NC_C1608
Q504
C545 0.1u
R530 10K
C546 0.1u
nSENSOR1
Q503
C543 0.1u
R529 10K
C544 0.1u
nSENSOR2
R506 47
R507 47
R508 47
C501 0.1u
R509 47
R510 47
LED_R
LED_G
C513 NC_C1608
C519 NC_C1608
C526 NC_C1608
C530 NC_C1608
C532 NC_C1608
Q501
R518 100
C540 1000p
RELAY
R511 0
R512 0
R513 0
R514 0
R515 0
TXP
TXN
TX_CP
RXN
RXP
C514 NC_C1608
C520 NC_C1608
C527 NC_C1608
C531 NC_C1608
C533 NC_C1608
R532 0
R534 0
R535 0
R537 0
CCD_TILT[0]
CCD_TILT[1]
CCD_TILT[2]
CCD_TILT[3]
CCD_TILT[3-0]
C506 220
C510 220
C516 220
C522 220
R516 47
PHO_STOP
C523 NC_C1608
C502 10u
C504 0.1u
R520 560
R521 560
R522 47
R523 47
L502 241
R525 47
R526 47
DEVREST
PDOWN
SCL
SDA
CAMCLK
VSYNC
HSYNC
RA502 601
RA503 601
YUV[0]
YUV[1]
YUV[2]
YUV[3]
YUV[4]
YUV[5]
YUV[6]
YUV[7]
YUV[7-0]
R540 3.3k
R539 3.3k
C536 NC_C1608
C537 NC_C1608
C538 NC_C1608
C539 NC_C1608
C541 NC_C1608
C507 NC_C1608
C511 NC_C1608
C517 NC_C1608
C524 NC_C1608
C508 NC_C1608
C512 NC_C1608
C518 NC_C1608
C525 NC_C1608
C528 NC_C1608
R501 47
TILT_SEN

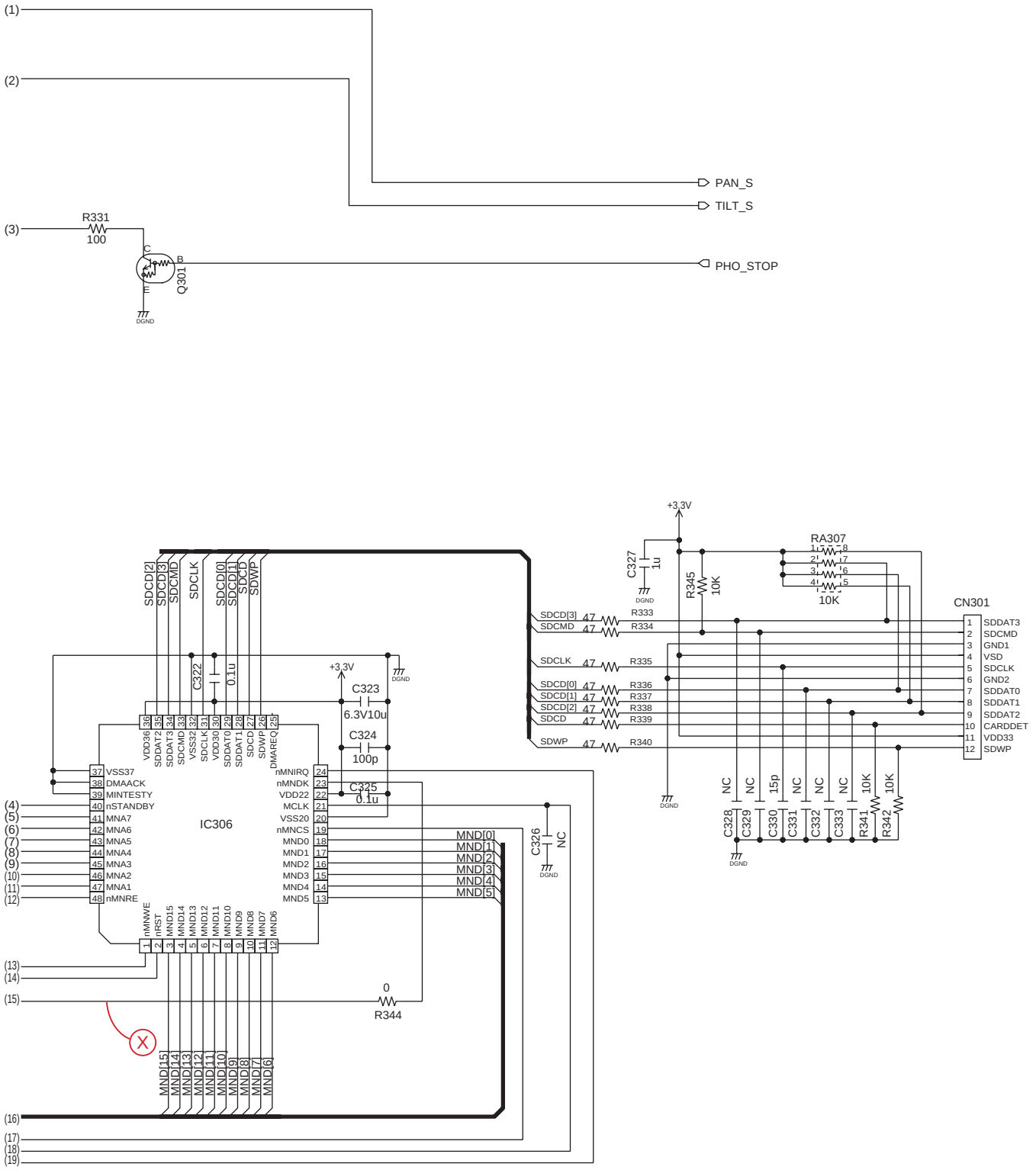


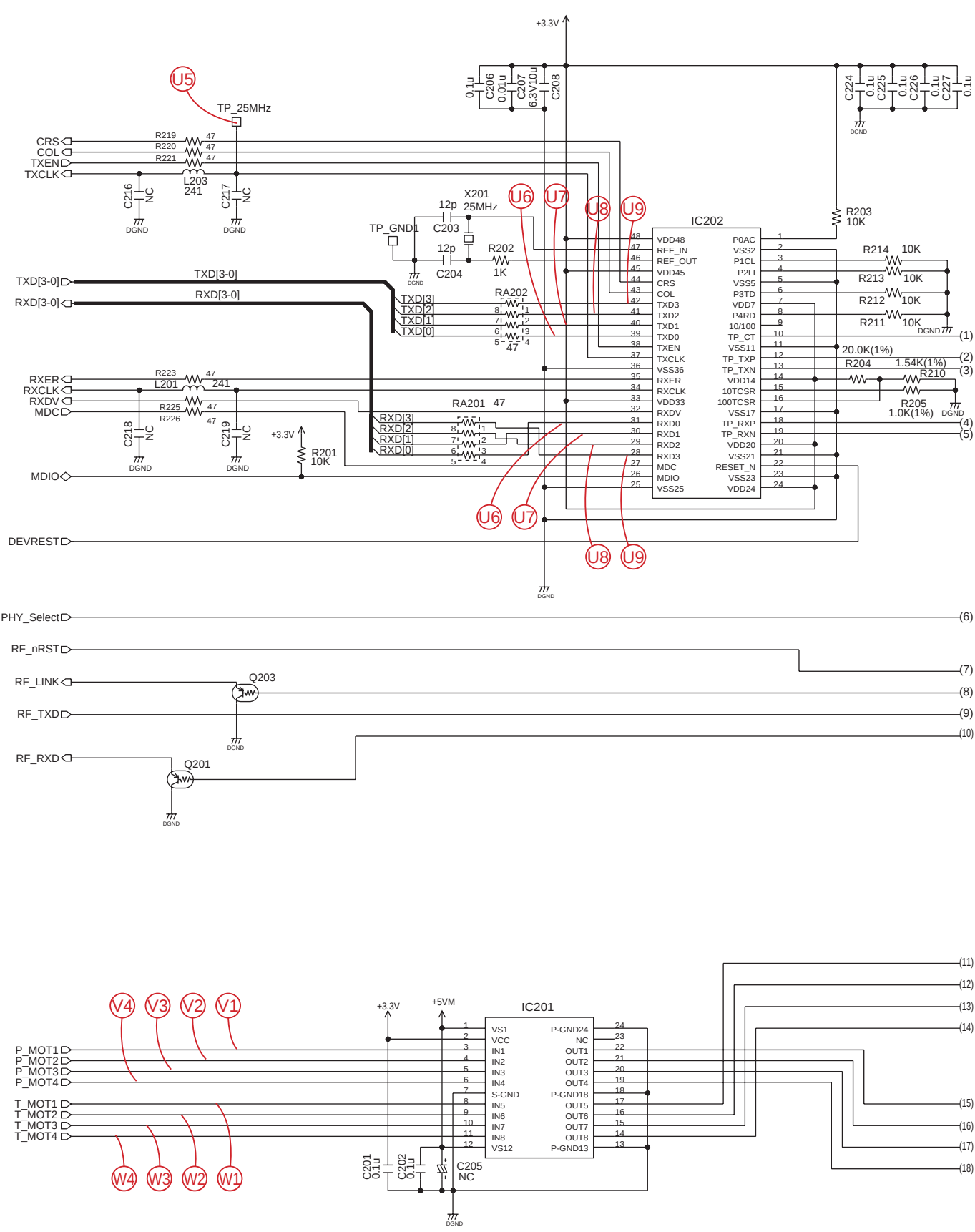
KX-HCM110A MAIN BOARD No.4 (1/2)


TP_MOTOR
+5VM
L403
10u
(1)
(2)
(3)
R409
27.0K(1%)
R413
2.7K
0.01u
C411
C413
6.3V47u(POSCAP)
C415
0.1u
C417
6.3V10u
R416
270
C419
NC_C1608
R410
12.0K(1%)
TP_3.3VCAM
+3.3VCAM
L407
10u
C444
1u
DGND
TP_D3.3V
+3.3V
L404
10u
(4)
(5)
(6)
R411
47.0K(1%)
R414
2.7K
0.01u
C412
C414
6.3V47u(POSCAP)
C416
0.1u
C418
6.3V10u
IC407
NC
GND
CE
Vout
Vin
C420
1u
C422
0.1u
TP_1.8V
+1.8V
C424
0.1u
C426
6.3V10u
R412
20.0K(1%)
TP_3.3VM
+3.3VM
(7)
(8)
(9)
R422
2.7K
0.01u
C431
C432
6.3V47u(POSCAP)
C433
0.1u
C434
6.3V10u

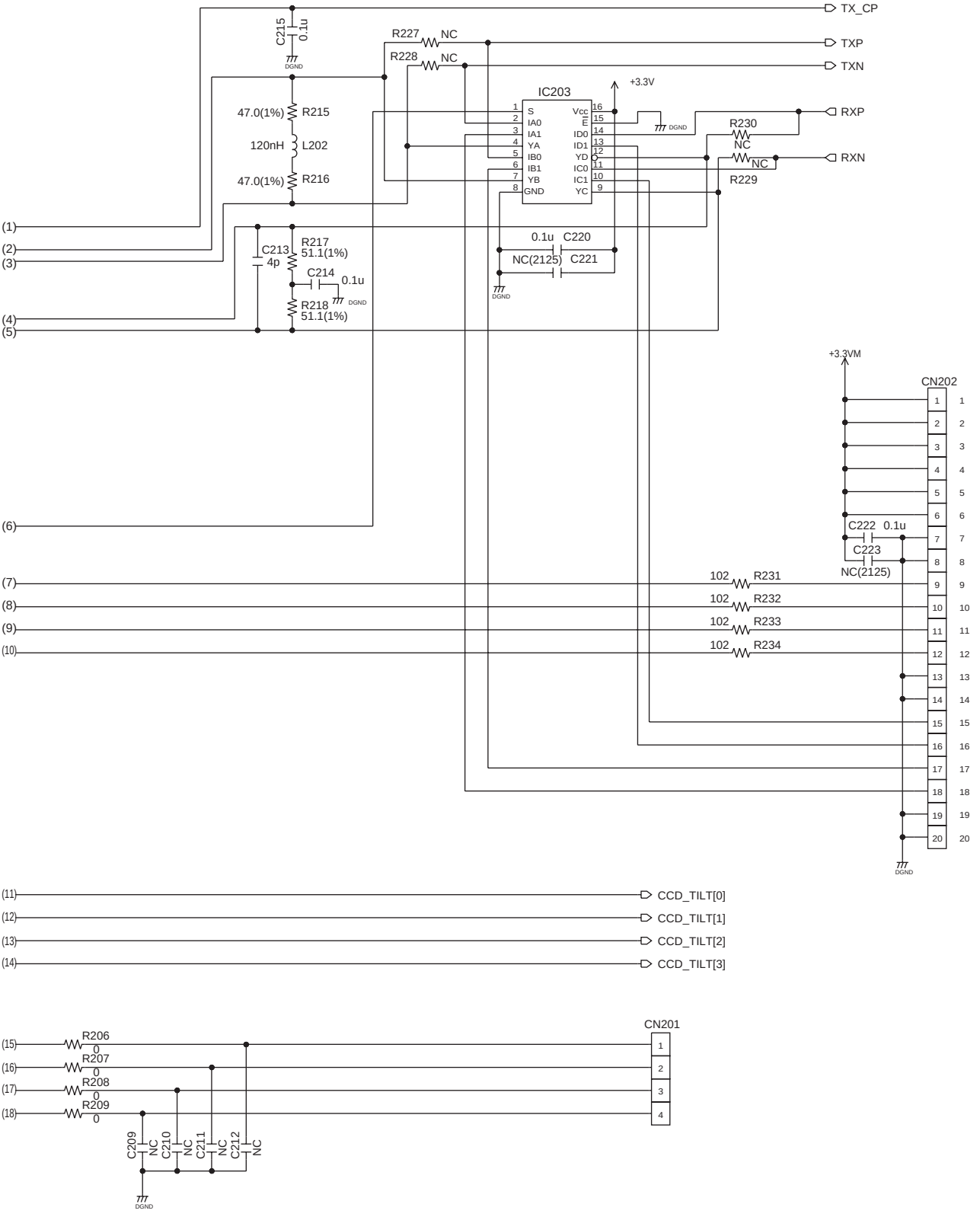

+3.3V
0.1u
C320
DGND
R322
4.7K
(1)
R325
4.7K
(2)
IC305
OUT_A
V+
A_IN
B_OUT
A+IN
B-IN
GND
B+IN
R321
100K
R320
100K
R326
100K
R328
100K
R329
10K
R330
10K
R318
10K
R319
10K
R310
10K
R311
10K
IC303
R316
10K
DA301
C307
0.1u
R309
NC
(3)
TILT_SEN
R323
10K

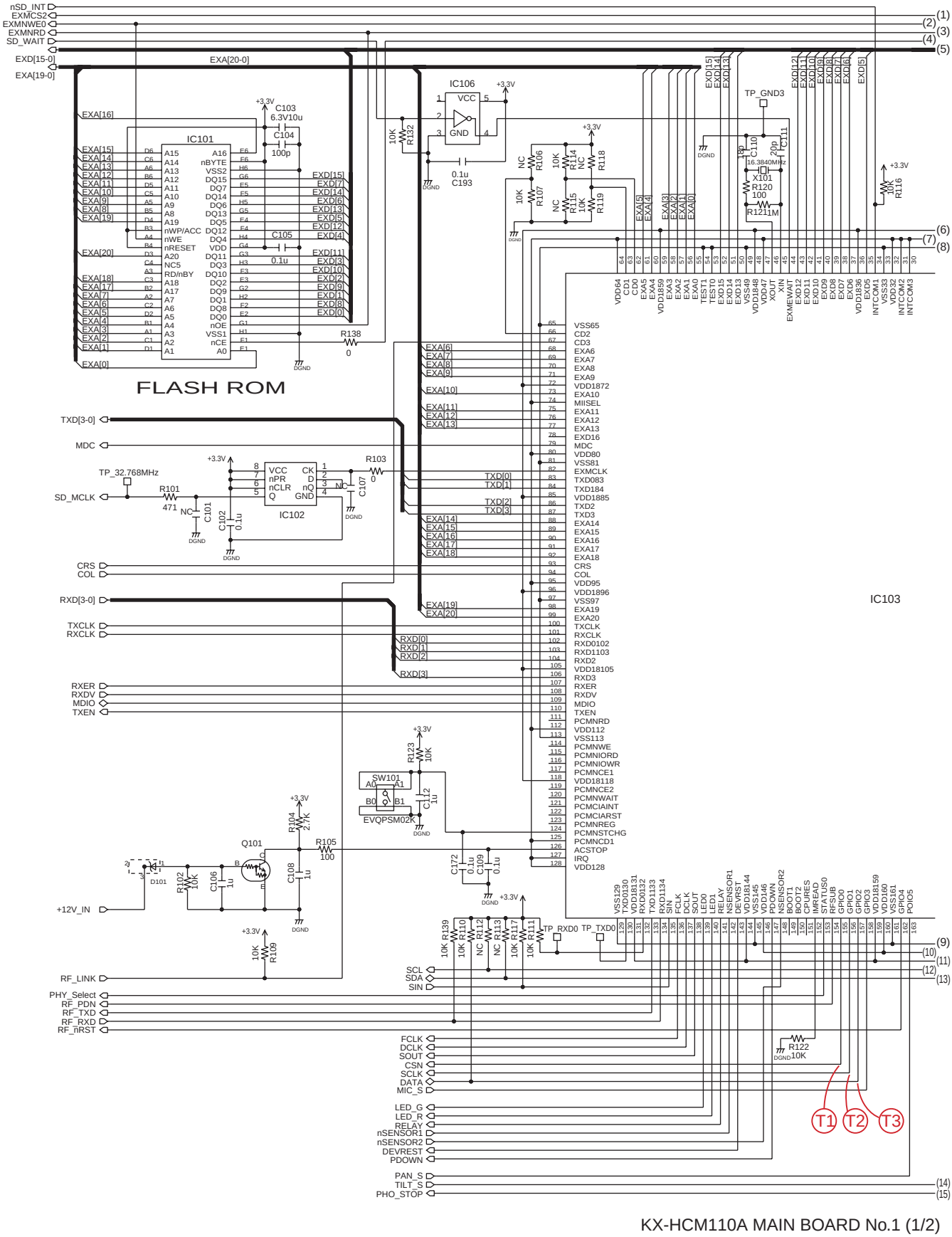

EXA[19-0]
RA305
33
EXA[0]
EXA[1]
EXA[2]
EXA[3]
MNA[1]
MNA[2]
MNA[3]
MNA[4]
RA306
33
EXA[4]
EXA[5]
EXA[6]
MNA[5]
MNA[6]
MNA[7]
PDOWN
(4)
(5)
(6)
(7)
(8)
(9)
(10)
(11)
(12)
EXD[15-0]
RA301
33
EXD[0]
EXD[1]
EXD[2]
EXD[3]
MND[0]
MND[1]
MND[2]
MND[3]
RA302
33
EXD[4]
EXD[5]
EXD[6]
EXD[7]
MND[4]
MND[5]
MND[6]
MND[7]
RA303
33
EXD[8]
EXD[9]
EXD[10]
EXD[11]
MND[8]
MND[9]
MND[10]
MND[11]
RA304
33
EXD[12]
EXD[13]
EXD[14]
EXD[15]
MND[12]
MND[13]
MND[14]
MND[15]
EXMNRD
EXMNWE0
DEVREST
R312
R314
R317
0
(13)
(14)
SD_WAIT
(15)
R343
NC
DGND
(16)
EXMCS2
SD_MCLK
nSD_INT
R313
R315
(17)
(18)
(19)

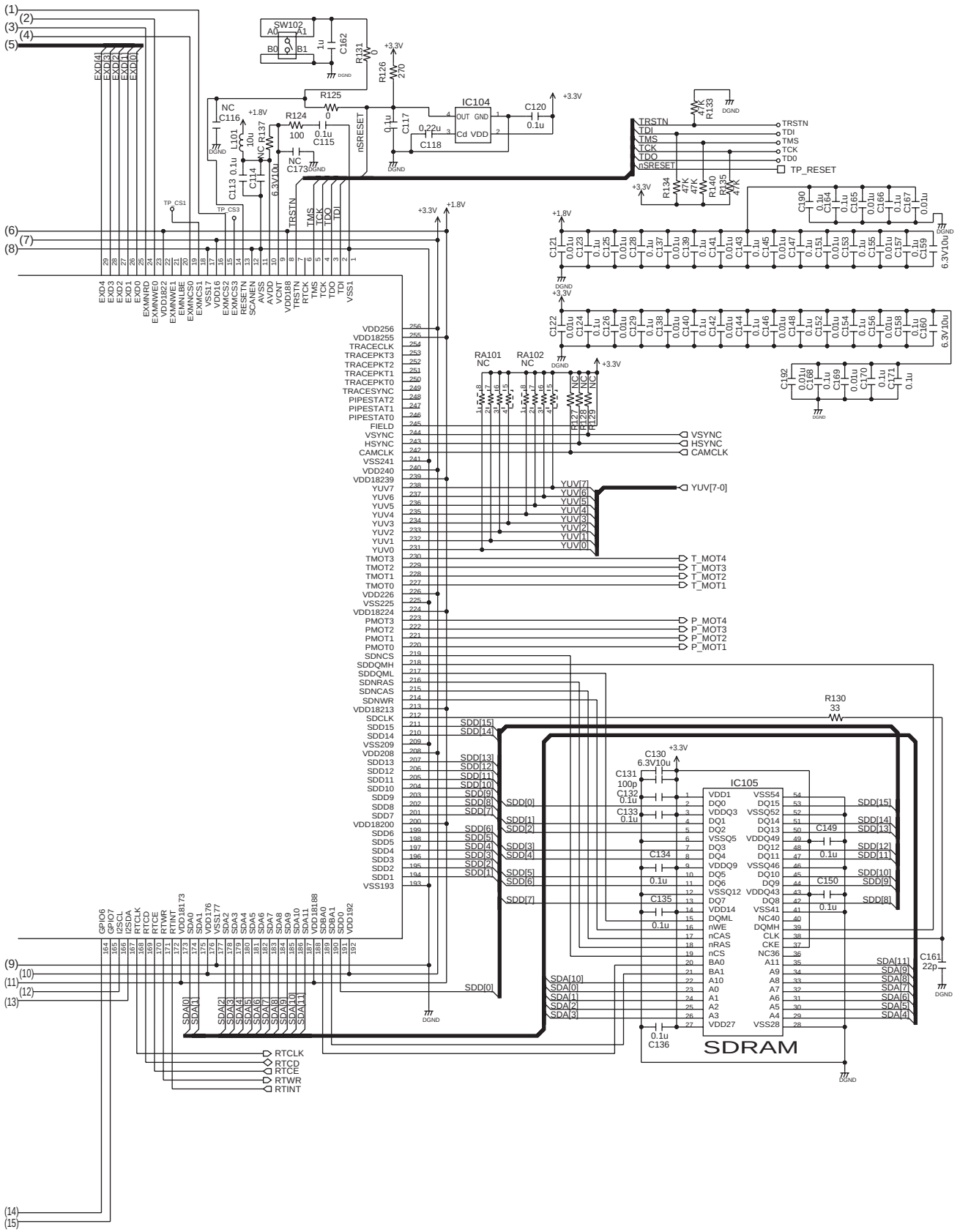

(1)
(2)
PAN_S
TILT_S
(3)
R331
100
Q301
PHO_STOP
DGND
IC306
SDCD[2]
SDCD[3]
SDCMD
SDCLK
SDCD[0]
SDCD[1]
SDCD
SDWP
C322
0.1u
+3.3V
C323
6.3V10u
C324
100p
C325
0.1u
DMAREQ
VDD36
SDDAT2
SDDAT3
SDCMD
VSS32
SDCLK
VDD30
SDDAT0
SDDAT1
SDCD
SDWP
VSS37
DMAACK
MINTESTY
nSTANDBY
MNA7
MNA6
MNA5
MNA4
MNA3
MNA2
MNA1
nMNRE
nMNIRQ
nMNDK
VDD22
MCLK
VSS20
nMNCS
MND0
MND1
MND2
MND3
MND4
MND5
nMNWE
nRST
MND15
MND14
MND13
MND12
MND11
MND10
MND9
MND8
MND7
MND6
MND[0]
MND[1]
MND[2]
MND[3]
MND[4]
MND[5]
C326
NC
0
R344
MND[15]
MND[14]
MND[13]
MND[12]
MND[11]
MND[10]
MND[9]
MND[8]
MND[7]
MND[6]
(4)
(5)
(6)
(7)
(8)
(9)
(10)
(11)
(12)
(13)
(14)
(15)
(16)
(17)
(18)
(19)
C327
1u
R345
10K
RA307
10K
SDCD[3]
SDCMD
SDCLK
SDCD[0]
SDCD[1]
SDCD[2]
SDCD
SDWP
47
R333
R334
R335
R336
R337
R338
R339
R340
CN301
SDDAT3
SDCMD
GND1
VSD
SDCLK
GND2
SDDAT0
SDDAT1
SDDAT2
CARDDET
VDD33
SDWP
NC
15p
10K
C328
C329
C330
C331
C332
C333
R341
R342

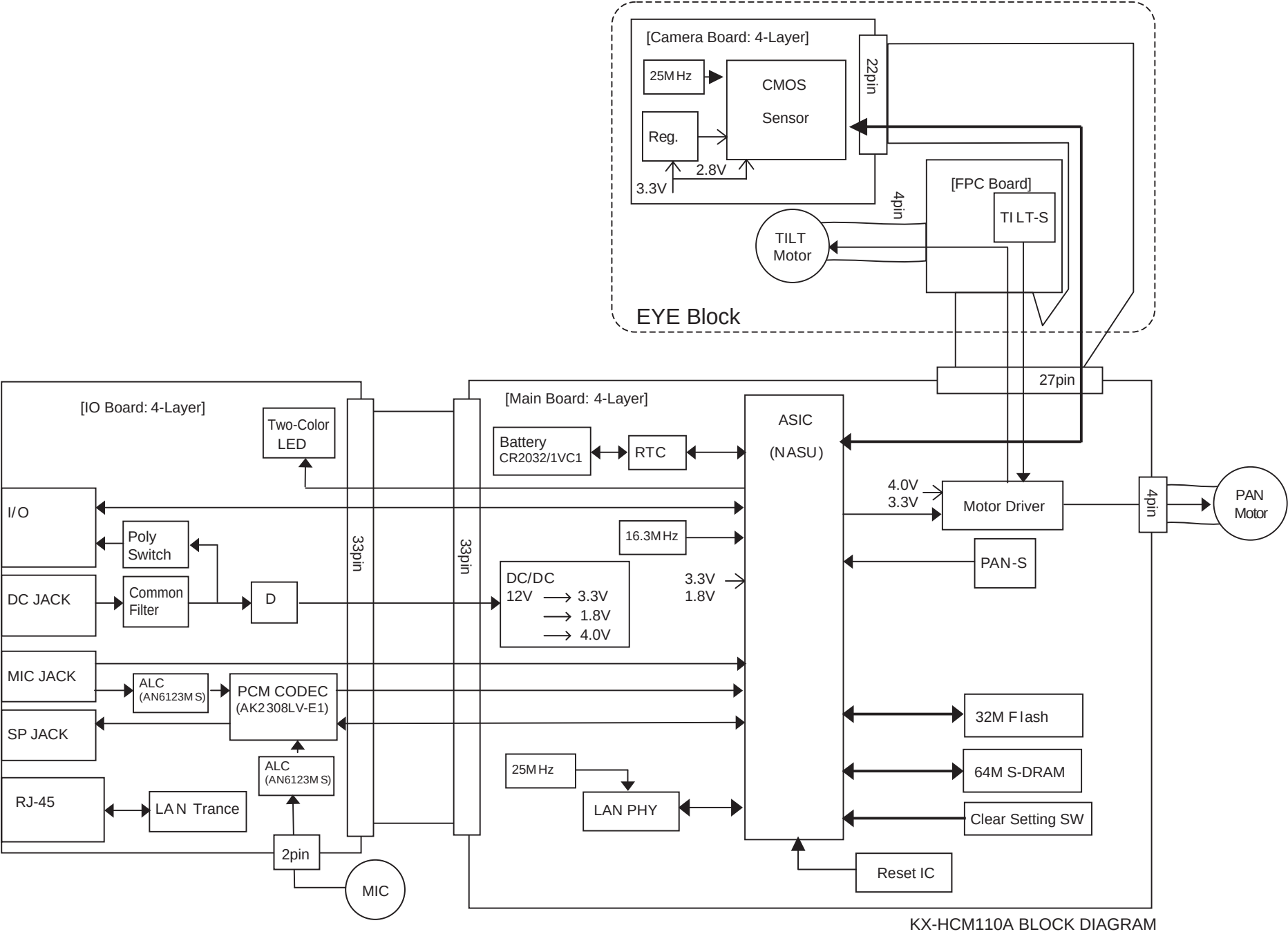


KX-HCM110A MAIN BOARD No.2 (1/2)


TX_CP
TXP
TXN
RXP
RXN
C215 0.1u
DGND
R227 NC
R228 NC
IC203
+3.3V
47.0(1%) R215
120nH L202
47.0(1%) R216
S
IA0
IA1
YA
IB0
IB1
YB
GND
Vcc
E
ID0
ID1
YD
IC0
IC1
YC
R230 NC
R229 NC
(1)
(2)
(3)
(4)
(5)
C213 4p
R217 51.1(1%)
C214 0.1u
R218 51.1(1%)
0.1u C220
NC(2125) C221
+3.3VM
CN202
(6)
C222 0.1u
C223 NC(2125)
(7)
(8)
(9)
(10)
102 R231
102 R232
102 R233
102 R234
(11)
(12)
(13)
(14)
CCD_TILT[0]
CCD_TILT[1]
CCD_TILT[2]
CCD_TILT[3]
CN201
(15)
(16)
(17)
(18)
R206 0
R207 0
R208 0
R209 0
C209 NC
C210 NC
C211 NC
C212 NC


FLASH ROM
IC101
IC102
IC103
IC106
SW101
EVQPSM02K
Q101
D101
TP_GND3
TP_RXD0
TP_TXD0
X101
16.3840MHz
TP_32.768MHz
nSD_INT
EXMCS2
EXMNWE0
EXMNRD
SD_WAIT
EXD[15-0]
EXA[19-0]
EXA[20-0]
SD_MCLK
TXD[3-0]
RXD[3-0]
MDC
CRS
COL
TXCLK
RXCLK
RXER
RXDV
MDIO
TXEN
+12V_IN
RF_LINK
PHY_Select
RF_PDN
RF_TXD
RF_RXD
RF_nRST
SCL
SDA
SIN
FCLK
DCLK
SOUT
CSN
SCLK
DATA
MIC_S
LED_G
LED_R
RELAY
nSENSOR1
nSENSOR2
DEVREST
PDOWN
PAN_S
TILT_S
PHO_STOP
T1
T2
T3


SW102
IC104
IC105
SDRAM
TP_RESET
VSYNC
HSYNC
CAMCLK
YUV[7-0]
T_MOT4
T_MOT3
T_MOT2
T_MOT1
P_MOT4
P_MOT3
P_MOT2
P_MOT1
RTCLK
RTCD
RTCE
RTWR
RTINT



KX-HCM110A BLOCK DIAGRAM